

CONTAMINATION ASSESSMENT REPORT

SITE 3221SW NAVAL AVIATION DEPOT NAVAL AIR STATION PENSACOLA, FLORIDA

UIC: N00204

Contract No. N62467-89-D-0317

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FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, especially petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which was also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, who were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations, Title 40, Part 280 (40 CFR 280) (Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks) and Title 40, Part 281 (Approval of State Underground Storage Tank Programs). Title 40, Part 280, was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of the Florida Department of Environmental Regulation (FDER) Chapter 17-770, Florida Administrative Code (FAC) (State Underground Petroleum Environmental Response) regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Aviation Depot (NADEP), Naval Air Station, Pensacola, Florida, at 904-452-2320, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1843, at DSN 563-0613 or 803-743-0613.

EXECUTIVE SUMMARY

During an underground storage tank (UST) removal program conducted by the U.S. Department of the Navy in 1989 and 1990, 18 sites at the Naval Aviation Depot (NADEP), Naval Air Station, Pensacola, Florida, were identified as having soil contamination exceeding State target levels for total recoverable petroleum hydrocarbons (TRPH). ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) for each of the 18 sites.

Site 3221SW is the former location of a 1,000-gallon UST reportedly used to store PD-680, a petroleum distillate. The UST was installed in 1967 and was removed from the site during the tank removal program. A single 1,000-gallon UST reportedly used for waste oil storage was installed at the former UST location.

During tank removal activities, two soil samples were collected from the UST excavation and composited. The composite sample was analyzed for total recoverable petroleum hydrocarbons (TRPH). The reported TRPH concentration of 57 parts per million (ppm) exceeded the State target level for TRPH of 50 ppm; hence, further investigation at the site was required pursuant to Chapter 17-770, Florida Administrative Code (FAC).

Soil borings and monitoring wells were placed at the site to assess the degree and extent of soil and groundwater contamination. Discrete soil samples were collected and analyzed by organic vapor analyzer (OVA) headspace techniques and for total metals contents. Groundwater samples were collected and analyzed for constituents of the waste oil analytical group. Groundwater levels were recorded from each monitoring well to assess the direction of groundwater flow.

Laboratory analyses of groundwater samples collected from monitoring wells installed at the site from January to March 1992 indicated that concentrations of petroleum groundwater contaminants were below State target levels. However, tetrachloroethene (PCE), was detected at concentrations exceeding the State recommended guidance concentration in four wells located downgradient of the former UST location. Although PCE has been found to be associated with petroleum (FDER, May 1989), it is not currently regulated under Chapter 17-770, FAC, guidelines; therefore, investigation at Site 3221SW was held in abeyance, and the Florida Department of Environmental Regulation (FDER) was notified of these findings.

A meeting was held on June 17, 1992, with FDER and the U.S. Environmental Protection Agency (USEPA) to discuss the manner of future investigation at Site 3221SW. Because the reported concentrations of PCE did not greatly exceed State recommended guidance concentrations, FDER and the USEPA agreed that additional site investigation could continue under Chapter 17-770, FAC, guidelines.

Site investigation recommenced in August 1992. Five additional downgradient monitoring wells were installed at the site. Groundwater samples from all monitoring wells were collected on August 29, 1992, and analyzed for constituents of the waste oil analytical group. Four additional soil borings were installed near the UST location. Soil samples were analyzed by OVA headspace techniques.

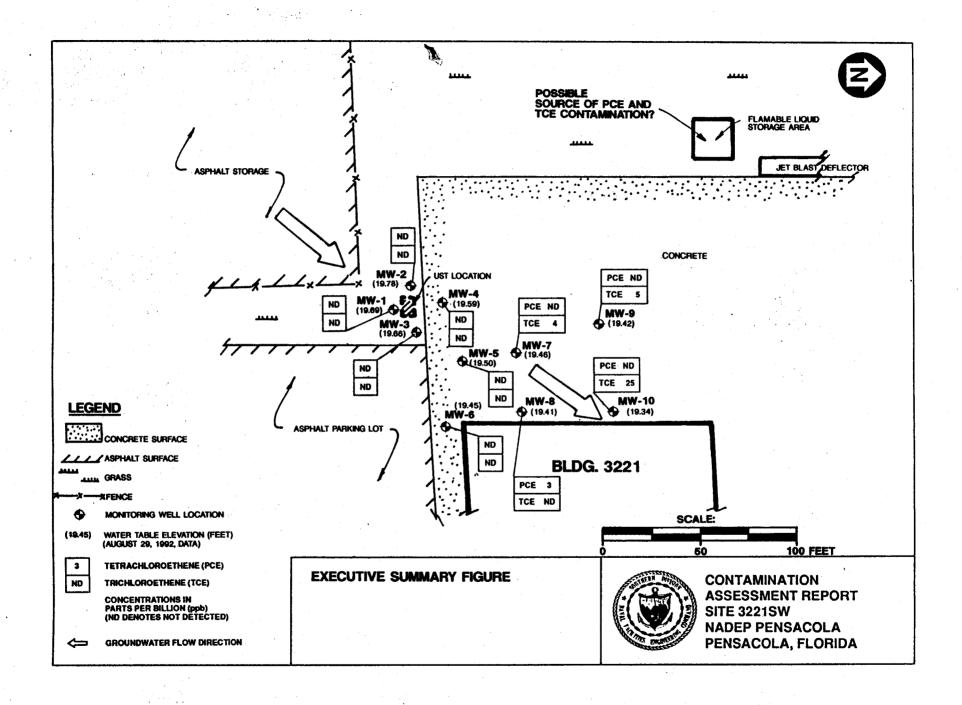
An additional soil sample was collected at the UST location and analyzed for TRPH. The findings, conclusions, and recommendations of the CA are summarized below.

Findings

- Water table elevation measurements indicate that groundwater flow direction is north-northeast.
- OVA headspace analyses and TRPH analysis of discrete soil samples indicate that petroleum contamination in soils near the UST is not significant.
- Concentrations of PCE in groundwater samples from site monitoring wells have decreased since the January to March 1992 sampling event. PCE was not detected in samples collected from monitoring wells located in the area near the former UST location (see Executive Summary Figure). PCE was detected only in the sample collected from well PEN-3221SW-MW8, located approximately 100 feet downgradient of the former UST location. The reported concentration of 4 parts per billion (ppb) slightly exceeds the State recommended guidance concentration of 3 ppb. PCE was not detected in the samples collected from monitoring well PEN-3221SW-MW10, which is located downgradient of PEN-3221SW-MW8.
- Trichloroethene (TCE) was detected at concentrations exceeding State recommended guidance concentrations of 3 ppb in samples collected from wells, PEN-3221SW-MW7, PEN-3221SW-MW9, and PEN-3221SW-MW10. The reported concentrations were 4 ppb, 5 ppb, and 25 ppb, respectively. These wells are located a minimum of 75 feet downgradient of the former UST location (see Executive Summary Figure). TCE was not detected in the samples collected from monitoring wells installed at the former UST locations.
- No other petroleum constituents were detected in groundwater samples collected August 29, 1992.
- The source of TCE and PCE groundwater contamination was not identified during this investigation. A possible source is the flammable liquid storage area located west of Building 3221.
- No potable water wells were identified within a 0.25-mile radius of the site.

Conclusions

- Soil and groundwater petroleum contamination near the UST appears to be minimal.
- TCE and PCE appear to be contaminants of concern at the site. The reported concentrations of TCE and PCE from the August 29, 1992, sampling event are shown in the Executive Summary Figure. The area of concern does not appear to extend upgradient of monitoring wells PEN-3221SW-MW4 and PEN-3221SW-MW5. The lateral and downgradient extent of TCE and PCE groundwater contamination has not been defined.



- Because petroleum contaminants were not found to be associated with PCE and TCE and because TCE and PCE were not found near the former UST locations, it does not appear that the former UST is the source of PCE and TCE contamination. A possible source of the PCE and TCE contamination may be the flammable liquid storage area located approximately 180 feet northwest of the UST area.
- It does not appear that normal site activities will result in the contamination of local potable water supplies at NAS Pensacola.

Recommendations

Because the PCE and TCE contamination found at the site does not appear to be related to leakage from the former or present USTs at Site 3221SW, a No Further Action Plan (NFAP) is recommended for the UST located at Site 3221SW. However, further site investigation is needed to assess the areal and vertical extent of TCE and PCE contamination.

ACKNOWLEDGMENTS

In preparing this report, The Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Group at ABB Environmental Services, Inc. (ABB-ES), commends the support, assistance, and cooperation provided by the personnel of the Naval Aviation Depot (NADEP), Pensacola, Florida, and Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). In particular, ABB-ES acknowledges the effort provided by the following people during the investigation and preparation of this report.

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GLOSSARY

The following list contains many of the acronyms, initialisms, abbreviations, and units of measure used in this report.

ABB-ES

ABB Environmental Services, Inc.

BETX

benzene, ethyl benzene, toluene, and xylenes

bls below land surface

CA CAP CAR

CFR

Contamination Assessment Contamination Assessment Plan Contamination Assessment Report

Code of Federal Regulations

CLEAN Comprehensive Long-Term Environmental Action, Navy Comprehensive Quality Assurance Plan

CompQAP CTO

Contract Task Order

FAC

Florida Administrative Code

FDER FID

Florida Department of Environmental Regulation

flame ionization detector

ft/day ft/ft ft/min

feet per day feet per foot feet per minute

GC

gas chromatograph

HSWA

Hazardous and Solid Waste Amendments of 1984

ID

inside diameter

K

hydraulic conductivity

ms1

mean sea level

porosity

NADEP NARF

Naval Aviation Depot Naval Air Rework Facility

NAS Naval Air Station

ND

not detected

NFAP

No Further Action Plan

NGVD

National Geodetic Vertical Datum

OVA

organic vapor analyzer

PCE POA ppb ppmPVC

tetrachloroethene Plan of Action parts per billion parts per million polyvinyl chloride

GLOSSARY (Continued)

RCRA

Resource Conservation and Recovery Act

SOUTHNAVFACENGCOM

Southern Division, Naval Facilities Engineering Command

SPT

standard penetration test

SWDA

Solid Waste Disposal Act of 1965

TCE

trichloroethene

TIC

tentatively identified compound

TRPH

total recoverable petroleum hydrocarbons

USEPA

U.S. Environmental Protection Agency

USGS UST

U.S. Geological Survey underground storage tank

V VOA VOC average pore water velocity volatile organic aromatics volatile organic compounds

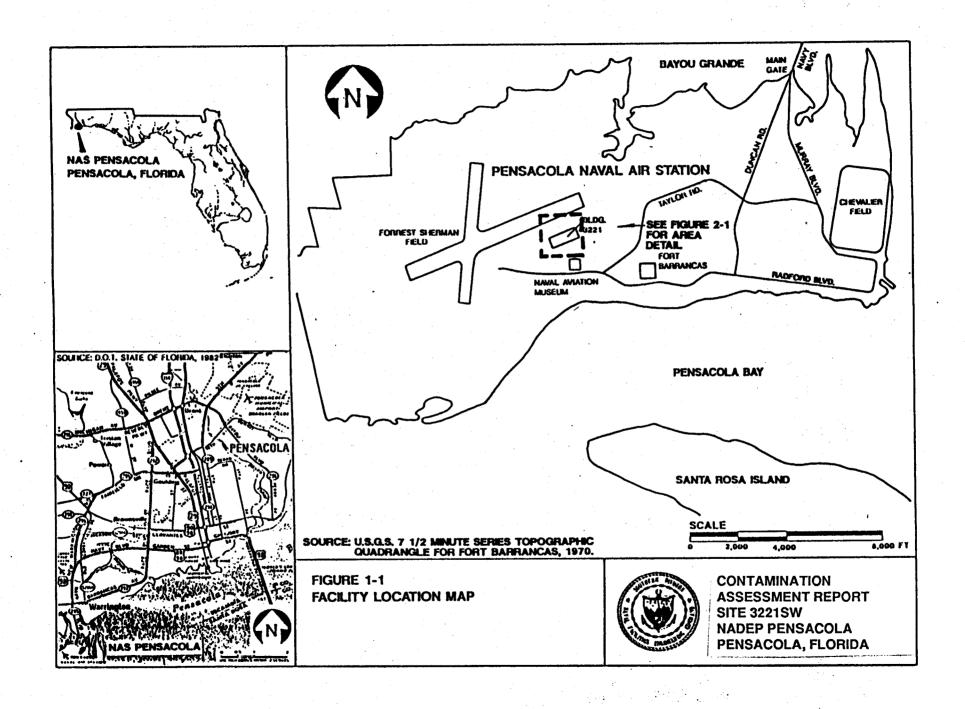
1.0 INTRODUCTION

In 1987, the Naval Air Rework Facility (NARF) in Pensacola, Florida, was renamed the Naval Aviation Depot (NADEP). NADEP Pensacola, Florida, formerly the operations and repair department of the Naval Air Station (NAS) Pensacola, is now a tenant command located on NAS facilities within the Pensacola Naval Base Complex. The Pensacola Naval Base Complex is located on the western edge of Pensacola Bay on State Route 295 (Navy Boulevard; Figure 1-1). NADEP Pensacola occupies approximately 130 acres at NAS Pensacola. The mission of NADEP Pensacola is to: maintain and operate facilities for, and perform a complete range of depot-level rework operations on designated weapons systems, accessories, and equipment; manufacture parts and assemblies, as required; provide engineering services in hardware design; furnish technical services on aircraft maintenance and logistic problems; and perform other levels of aircraft maintenance.

During a tank removal program implemented by the U.S. Department of the Navy in 1989 and 1990, petroleum underground storage tanks (USTs) at various NADEP site locations were removed. In many cases, these tanks were replaced with new USTs. Tank contents were reportedly restricted to petroleum products ranging from waste oil, diesel fuel, and unleaded gasoline to PD-680 (a petroleum distillate solvent similar to mineral spirits). The reported volumes of the tanks varied from 500 to 3,000 gallons. Soil samples were collected from each tank excavation and analyzed for total recoverable petroleum hydrocarbons (TRPH). Based on TRPH concentrations, 18 sites were found to be non-compliant with Florida Department of Environmental Regulation (FDER) target levels, as defined in Chapter 17-770, Florida Administrative Code (FAC).

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a Contamination Assessment Report (CAR) for the 18 petroleum contaminated sites at NADEP. This CAR is submitted for one of the sites, Site 3221SW. The scope of services for the work at Site 3221SW is described in Contract Task Order (CTO) No. 008, the Plan of Action (POA), and the Contamination Assessment Plan (CAP) and included the following:

- drilling soil borings and analyzing site soils to assess the extent of soil contamination,
- installing and sampling groundwater monitoring wells to assess the extent of groundwater contamination,
- collecting water level data to assess the groundwater flow direction and hydraulic gradient at the site,
- conducting a potable well inventory within a 0.25-mile radius of the site,
- conducting slug tests on selected wells to estimate aquifer characteristics, and



• reducing and analyzing pertinent data gathered during the CA to complete this CAR.

The CA at Site 3221SW was conducted from January through December 1992. The following sections of this report present the background information, data compilation, results, conclusions, and recommendations of the CAR.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION. Site 3221SW is a UST located approximately 80 feet from the southwest corner of Building 3221. Building 3221 is located near the eastern edge of the Forrest Sherman Field runway (Figure 2-1) and it is the location of various helicopter maintenance and repair activities for the NADEP. The eastern half of the facility is currently being used by the Museum of Naval Aviation for aircraft restoration. Restoration activities include, but are not limited to, the use of paint and paint products. A large, 18-inch thick concrete apron extends north from Building 3221 to the intersection with the Forrest Sherman Field flightline.

Site 3221SW is the former location of a 1,000-gallon UST reportedly used to store PD-680, a petroleum distillate. The UST was replaced, at the same location, with a 1,000-gallon UST used for the storage of waste oil and PD-680. Figure 2-2 is a site plan showing the location of the existing UST and surface features in the site vicinity.

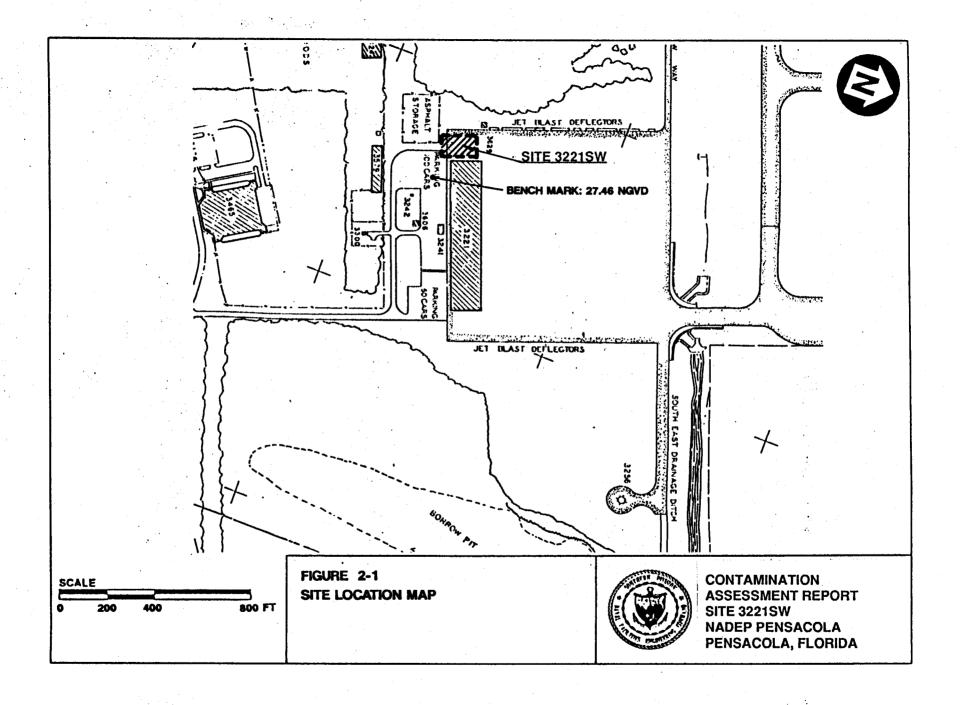
The former UST location is in a grassy area to the southwest of Building 3221. The area north of the UST is covered by 18-inch-thick concrete. This area is primarily used for storage of miscellaneous aircraft and helicopter parts. An asphalt covered parking lot is located to the east of the site (see Figure 2-2 for site details).

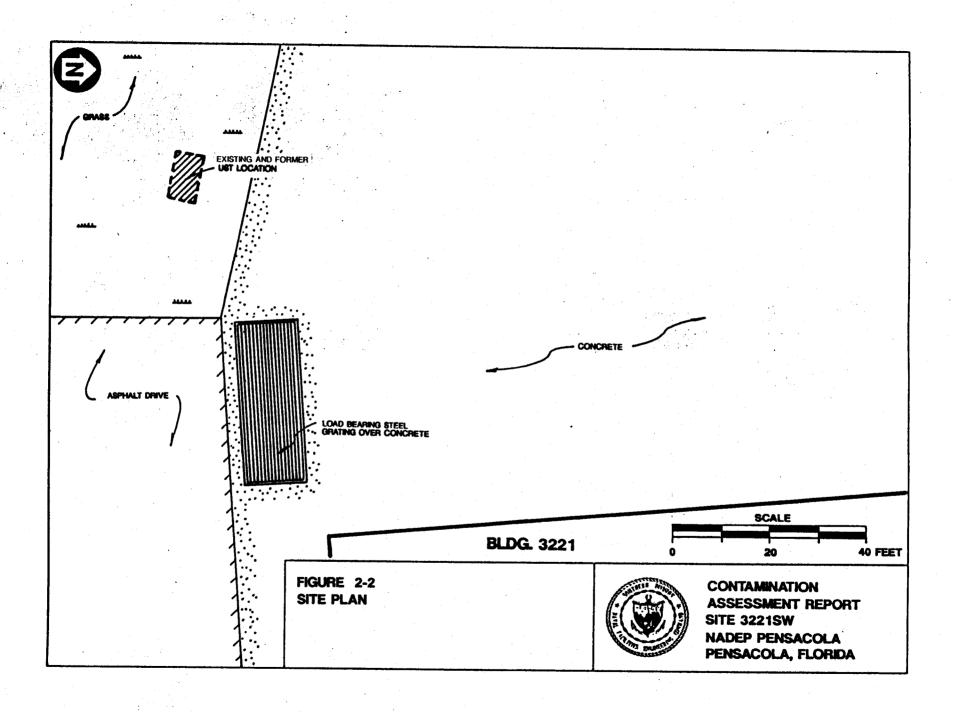
 $\underline{2.2}$ SITE HISTORY. The former UST was installed in 1967 and was removed from the site during the tank removal program. The UST was replaced with the existing 1,000-gallon UST.

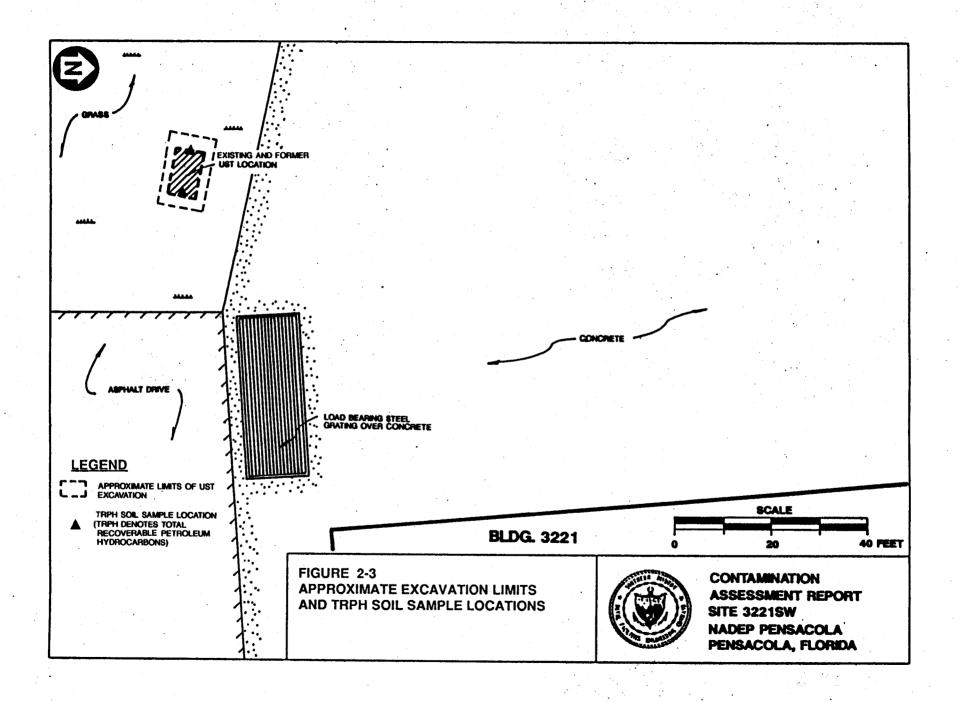
Two soil samples were collected from the former UST excavations at a depth of approximately 6 feet below land surface (bls). The samples were composited and analyzed for TRPH. The reported TRPH soil concentration of 57 parts per million (ppm) exceeded the State target level of 50 ppm for petroleum contaminated soils (FDER, May 1992) and, therefore, required further investigation pursuant to Chapter 17-770, FAC. Soil TRPH laboratory analytical results are presented in Appendix E, Laboratory Analytical Data.

The approximate areal extent of the UST excavation and the approximate locations of the TRPH soil samples are shown in Figure 2-3. Excavated soils were returned to the excavation after UST removal.

During initial field investigation activities, performed by ABB-ES from January to April 1992, eight soil borings, five permanent monitoring wells, and three temporary monitoring wells were placed at the site to assess the degree and extent of soil and groundwater contamination. Laboratory analyses of groundwater samples collected from these wells indicated that concentrations of petroleum groundwater contaminants were below State target levels. However, three chlorinated compounds, tetrachloroethene (PCE), dibromochloromethane, and trichlorofluoromethane, were identified in the groundwater samples. One of these







compounds, PCE, was detected at concentrations exceeding State recommended guidance concentrations in four monitoring wells located downgradient of the former UST location.

Because these compounds are not regulated under Chapter 17-770, FAC, guidelines, investigation at Site 3221SW was held in abeyance, and the FDER was notified of these findings. A meeting was held on June 17, 1992, with FDER and the U.S. Environmental Protection Agency (USEPA) to discuss the manner of future investigations at Site 3221SW. Because the reported concentrations of PCE did not greatly exceed State recommended guidance concentrations, FDER and the USEPA agreed that additional site investigation could continue under Chapter 17-770, FAC, guidelines.

Site investigation recommenced in August 1992 and involved the installation of five additional wells located downgradient of the UST and four additional soil borings near the UST location. The results of this investigation are discussed in Section 5.0 of this report.

3.0 SITE CONDITIONS

<u>3.1 PHYSIOGRAPHY</u>. Regional physiography is discussed in Appendix A, Site Conditions. Surface elevations at the site are relatively flat and are approximately 26 to 28 feet above mean sea level (msl).

3.2 HYDROGEOLOGY.

- 3.2.1 Regional and Local The Pensacola area is underlain by three water bearing zones. These zones, in order of increasing depth, are the sand-and-gravel aquifer, the Upper Floridan aquifer, and the Lower Floridan aquifer. A detailed discussion of these three aquifers is presented in Appendix A.
- 3.2.2 Site Specific The principal aquifer of concern at the site is the surficial zone of the sand-and-gravel aquifer. The surficial zone was penetrated to a depth of approximately 20 feet during this investigation. This zone is generally composed of very fine-grained to fine-grained quartz sand. The sand varies in color from white, gray, tan, light brown, and brown to orange-red. A lens of peat was encountered at approximately 17 feet bls in the northwest part of the site. Shell fragments are present in discontinuous layers. The surficial zone is unconfined, and the water table was encountered at depths of 7 to 9 feet bls during this investigation. Site-specific aquifer characteristics and other hydrogeologic parameters are discussed in Section 5.1.

Lithologic logs for soil borings SB1 through SB13 are presented in Appendix B, Lithologic Logs.

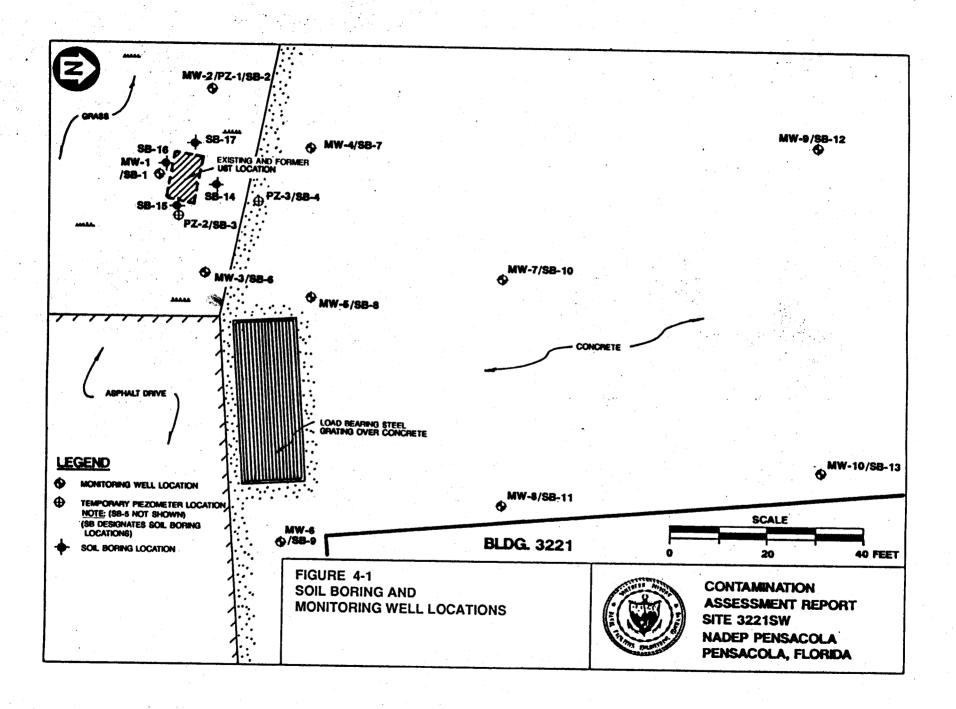
4.0 METHODOLOGIES AND EQUIPMENT

- 4.1 SOIL BORING AND SOIL SAMPLING PROGRAM. Seventeen soil borings, SB1 through SB17, were drilled at the site to assess: the extent and levels of soil petroleum contamination, characterize the type of subsurface material, and aid in the placement of subsequent groundwater monitoring wells. Soil boring locations are shown in Figure 4-1. Discrete soil samples collected from split-spoon standard penetration tests (SPTs) were analyzed for petroleum constituents with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Soil samples were also analyzed for total metals by Wadsworth/ALERT Laboratories, Tampa, Florida. An additional soil sample, collected from SB14 at a depth of 6 feet bls, was analyzed for TRPH. The results of the soil boring program and soil sampling program are discussed in Section 5.2.
- 4.2 MONITORING WELL INSTALLATION PROGRAM. Three temporary wells, PEN-3221SW-PZ1 through PEN-3221SW-PZ3, were also installed. Temporary well PEN-3221SW-PZ1 was later upgraded to a permanent well, PEN-3221SW-MW2. The remaining temporary wells have been removed. The monitoring well installation phase of the site 3221SW investigation took place during January 7 through August 27, 1992. A total of 10, 2-inch inside diameter (ID) permanent monitoring wells were installed in selected soil borings. These wells are designated as PEN-3221SW-MW1 through PEN-3221SW-MW10. For simplicity, the prefix "PEN-3221SW" has been omitted on figures and tables in this report. Monitoring well locations are shown in Figure 4-1. Monitoring well construction methodologies and materials are discussed in Appendix C, Investigative Methodologies and Procedures.
- 4.3 GROUNDWATER ELEVATION SURVEY. The elevation of the water table was measured by surveying the top of the well casing for each monitoring well to a common reference datum using a surveyor's level and stadia rod. Elevations were referenced to a benchmark located on a headwall, approximately 30 feet southeast of the southwest corner of Building 3221 (see Figure 2-1). This benchmark is part of the U.S. Coastal and Geodetic Survey benchmarking system and has an elevation of 27.46 feet above the National Geodetic Vertical Datum (NGVD) of 1929.

Groundwater levels were recorded on April 15, May 20, and August 29, 1992. Procedures for obtaining groundwater level measurements are described in Appendix C, Investigative Methodologies and Procedures.

4.4 GROUNDWATER SAMPLING PROGRAM. Groundwater samples were collected from monitoring wells PEN-3221SW-MW1, and PEN-3221SW-PZ1 through PEN-3221SW-PZ3, on January 25, 1992. Monitoring wells PEN-3221SW-MW2 through PEN-3221SW-MW10 had not been installed at that time. Monitoring wells PEN-3221SW-MW1 through PEN-3221SW-MW5 were sampled on April 15, 1992. Monitoring wells PEN-3221SW-MW6 through PEN-3221SW-MW10 had not been installed at that time. The three temporary wells, PEN-3221SW-PZ1 through PEN-3221SW-PZ3, had been removed or upgraded prior to the April 15 sampling event. All ten permanent monitoring wells were sampled on August 29, 1992.

Groundwater samples were submitted to Wadsworth/ALERT Laboratories for volatile organic compound (VOC) analysis by USEPA Method 624, for base-neutral and acid extractable analysis by USEPA Method 625, for total metals analysis, and for TRPH



analysis. Duplicate samples, laboratory blanks, equipment blanks, and trip blanks were also analyzed with the monitoring well samples. Procedures for collection of groundwater samples are presented in Appendix C, Investigative Methodologies and Procedures.

4.5 AQUIFER SLUG TESTS. Three rising head slug tests were performed in monitoring well PEN-3221SW-MW1 to assess the hydraulic conductivity of the aquifer. Procedures for conducting slug tests are included in Appendix C, Investigative Methodologies and Procedures. Slug test graphical data and calculations are attached in Appendix D, Aquifer Parameter Calculations.

5.0 CONTAMINATION ASSESSMENT RESULTS

5.1 SITE-SPECIFIC AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS. The surficial zone of the sand-and-gravel aquifer is the primary interval of concern at the site. The surficial zone is unconfined, and the water table was encountered at depths ranging from 7 to 9 feet bls.

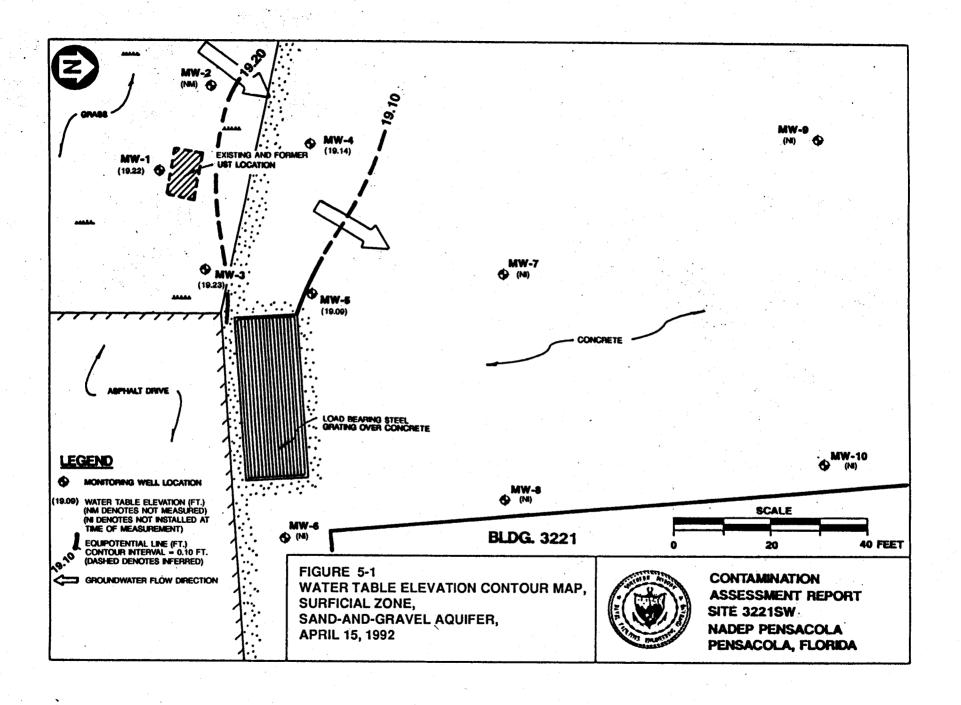
Groundwater levels were recorded in monitoring wells PEN-3221SW-MW1 through PEN-3221SW-MW5 on April 15 and May 20, 1992 (PEN-3221SW-MW6 through PEN-3221SW-MW10 were not yet installed). Groundwater levels were recorded in all ten site monitoring wells on August 29, 1992. These measurements are presented in Table 5-1 and were used to construct water table elevation contour maps to approximate the groundwater flow direction at the site. Water table elevation contour maps for measurements recorded on each date are shown in Figures 5-1 through 5-3. The data indicate a north to northeast groundwater flow direction for each date.

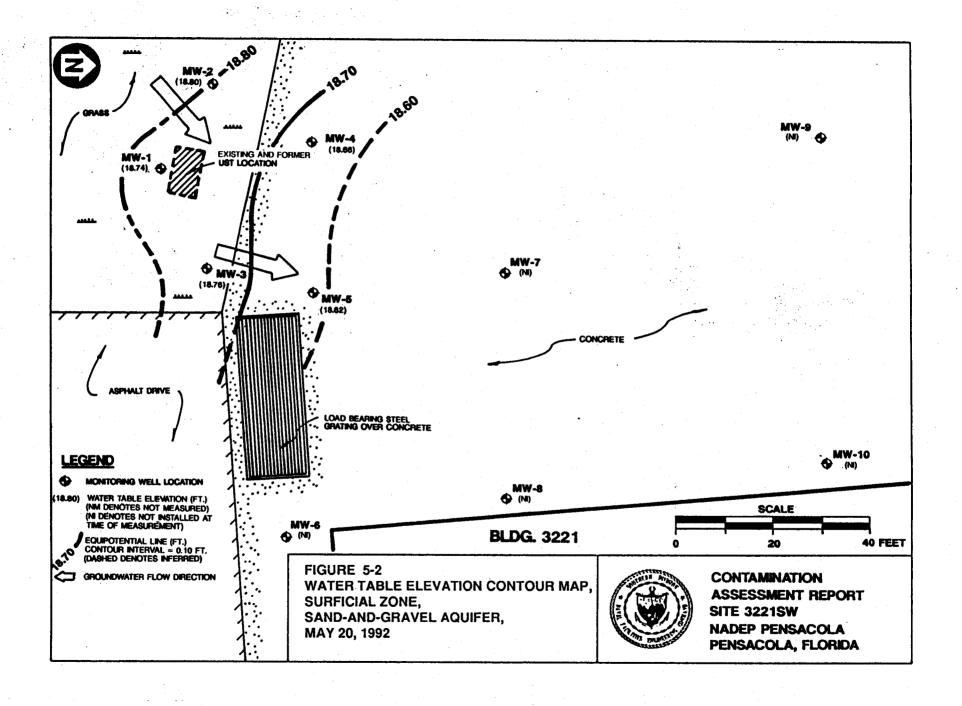
The calculated average hydraulic gradient at the site is 5.6×10^{-3} feet per foot (ft/ft). Slug tests indicate an average horizontal hydraulic conductivity (K) of 5.7×10^{1} feet per day (ft/day). The calculated pore water velocity (V) is 1.2 ft/day. Equations and calculations used to estimate these values are presented in Appendix D.

5.2 CONTAMINANT PLUME DEFINITION AND CHARACTERIZATION.

5.2.1 Soil Contamination Assessment The soil contamination assessment phase was conducted January through December 1992. Soil sample locations and analytical results are shown in Figure 5-4. Discrete soil samples from SPT samples were collected from depths of 5 to 7 feet bls in soil borings SB1 through SB13. Soil samples were collected from soil borings SB14 through SB17 at 2-foot intervals to a depth of 6 feet bls. Soil samples were analyzed using OVA headspace techniques. Laboratory total metals analyses for arsenic, cadmium, chromium, and lead were also performed for samples collected from SB1 through SB13. OVA headspace readings and a summary of total metals analyses are presented in Tables 5-2 and 5-3, respectively. In addition, one soil sample was collected from soil boring SB14 at a depth of 6 feet bls. This sample was analyzed for TRPH.

OVA headspace readings indicate that petroleum soil contamination at the site is minimal. Results of laboratory analyses for total metals indicate metals contamination in soil at the site is minimal. Lead was the only metal detected in soil samples collected at the site at a concentration of 13 ppm in the sample from SB-6 at a depth of 6 feet bls. This is far below the State target level of 77 ppm. TRPH concentrations of the sample collected from soil boring SB-14 were 11 ppm, which slightly exceeds the clean soil criterion of 10 ppm. No petroleum odors or discolorations were observed in any soils at the site.





<u>5.2.2 Groundwater Contamination Assessment</u> In some areas of Escambia County, Florida, the surficial zone of the sand-and-gravel aquifer has been demonstrated to be hydraulically connected with the main producing zone of the sand-and-gravel aquifer, making potable water supplies susceptible to contamination in these areas (Roaza and others, 1991). For this reason, the surficial zone at NAS Pensacola will be herein treated as a Class G-II water source, and Class G-II State groundwater target levels will be applied throughout this report.

Groundwater samples were collected from monitoring wells PEN-3221SW-MW1 and PEN-3221SW-PZ1 through PEN-3221SW-PZ3 on January 25, 1992. Monitoring wells PEN-3221SW-MW1 and four additional wells, PEN-3221SW-MW2 through PEN-3221SW-MW5, were sampled on April 15, 1992. In August 1992, five additional monitoring wells were installed for a total of ten monitoring wells. All ten monitoring wells were sampled on August 29, 1992. Groundwater sample laboratory analytical results are presented in Appendix E, Laboratory Analytical Data. Groundwater analytical laboratory results for the January 25, April 15, and August 29, 1992, sampling event are summarized in Tables 5-4, 5-5, and 5-6, respectively.

5.2.2.1 Groundwater Laboratory Analytical Results, January 25, 1992, Sampling Event The distribution of contaminants detected in groundwater samples collected from monitoring wells PEN-3221SW-MW1 and PEN-3221SW-PZ1 through PEN-3221SW-PZ3 on January 25, 1992, is shown in Figure 5-5. The only petroleum constituent identified in the groundwater samples was toluene. Other compounds identified were chloroform, PCE, dibromochloromethane, acetone, trichlorofluoromethane, and methylene chloride (see Table 5-4).

Toluene was detected in samples collected from wells PEN-3221SW-PZ2 and PEN-3221SW-PZ3 at concentrations of 16 parts per billion (ppb) in both. Toluene was also detected in the trip blank associated with this sampling event at a concentration of 3 ppb. Total volatile organic aromatics (VOA) is the sum of benzene, toluene, ethylbenzene, and xylenes. Toluene concentrations in both PEN-3221SW-PZ2 and PEN-3221SW-PZ3 were well below the target levels of 50 ppb for Wadsworth/ALERT Laboratories has reported a random appearance of toluene in samples, trip blanks, and equipment blanks at levels ranging from 2 ppb to 22 ppb. During their investigation of the random contamination, it was discovered that the sample container labels in use at that time were contaminated with toluene and 2-butanone. These compounds are volatile and it is possible that the labels might have contaminated the samples. Because the trip blank associated with this sampling event was contaminated with toluene, and toluene was not found in later sampling events, the source of the toluene contamination may have been the sample container labels.

PCE and methylene chloride were the only compounds detected in concentrations exceeding State recommended guidance concentrations (FDER, February, 1991). The State recommended guidance concentration is 3 ppb for PCE and 5 ppb for methylene chloride.

PCE was detected in samples collected from temporary wells PEN-3221SW-PZ2 and PEN-3221SW-PZ3 at concentrations of 15 ppb and 9 ppb, respectively. PCE was not detected in the samples collected from monitoring well PEN-3221SW-MW1 and temporary well PEN-3221SW-PZ1. At the time of sampling, monitoring wells PEN-3221SW-PZ2 and PEN-3221SW-PZ3 were the two most downgradient wells at the site.

Table 5-3 Summary of Soil Sample Total Metals Analyses, January through December 1992

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Sample	Depth		Cone	centration	
Identification	(feet)	Arsenic	Cadmium	Chromium	Lead
SB1/MW1	5 to 7	ND	ND	ND	ND
SB2/MW2	5 to 7	ND	ND	ND	ND
SB3/PZ2	5 to 7	ND	ND	ND	ND
SB4/PZ3	5 to 7	ND	ND	ND	ND
SB5		No s	sample collected		
SB6/MW3	6	ND	ND	ND	13
SB7/MW4	- 5	ND	ND	ND	ND
SB8/MW5	5 to 7	ND	ND	ND	ND
SB9/MW6	5	ND	ND	ND	ND
SB10/MW7	5	ND	ND	ND	ND
SB11/MW8	5	ND	ND	ND	ND
SB12/MW9	5	ND	ND	ND	ND
SB13/MW10	5	ND	ND	ND	ND
State target level ¹		55	55	275	77

¹Florida Department of Environmental Regulation (May 1992).

Notes: Concentrations are in parts per million (ppm).

Samples collected from SB14 through SB17 were not analyzed for total metals.

ND = not detected.

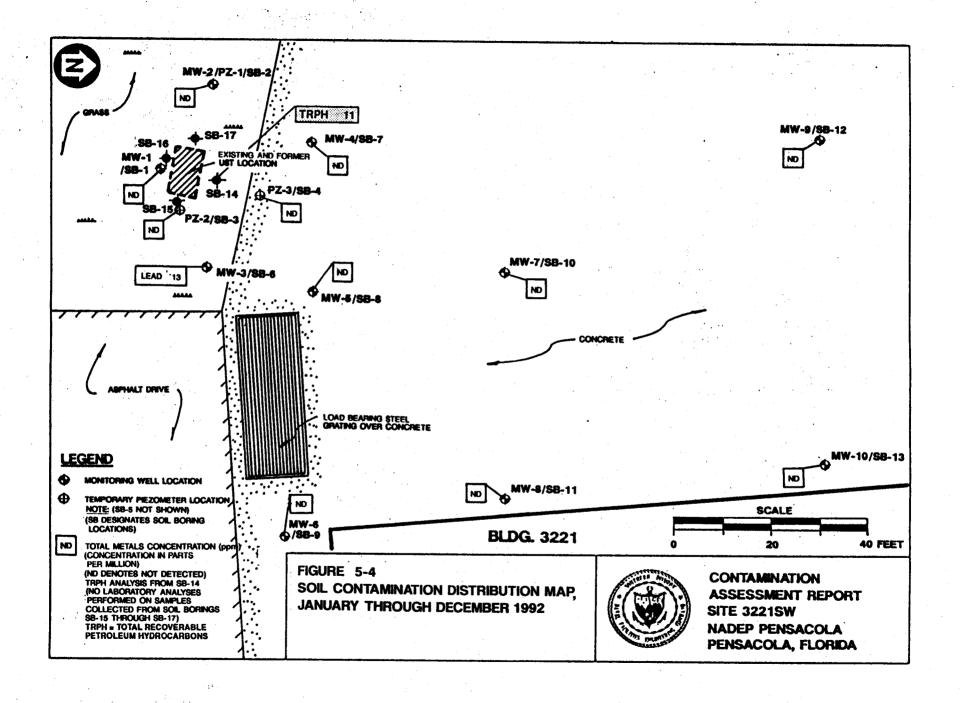
Table 5-2 Summary of Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses, January through December 1992

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Boring Designation	Depth (feet)	Concentration ¹ (ppm)	Comments
SB1/MW1	5-7	0	No odor and no discoloration
SB2/PZ1	5-7	0	No odor and no discoloration
SB3/PZ2	5-7	0	No odor and no discoloration
SB4/PZ3	5-7	0	No odor and no discoloration
SB5/PZ4	NM	NM	
SB6/MW3	5	0	No odor and no discoloration
SB7/MW4	5-7	0	No odor and no discoloration
SB8/MW5	5-7	0	No odor and no discoloration
SB9/MW6	5	0	No odor and no discoloration
SB10/MW7	5	0	Slight sulfur odor, no discoloration
SB11/MW8	NM	NM	Slight sulfur odor, no discoloration
SB12/MW9	5	0	No odor and no discoloration
SB13/MW10	5	0	No odor and no discoloration
SB14	2	1	No odor and no discoloration
	4	0	No odor and no discoloration
	6	0	No odor and no discoloration
SB15	2	0	No odor and no discoloration
	4	0	No odor and no discoloration
	6	NM	No odor and no discoloration
SB16	2	3	No odor and no discoloration
= - · ·	4	0	No odor and no discoloration
	6	Ö	No odor and no discoloration
SB17	2	NM	No odor and no discoloration
	4	0	No odor and no discoloration
	6	0	No odor and no discoloration

'Corrected for methane.

Note: ppm = parts per million. NM = not measured.



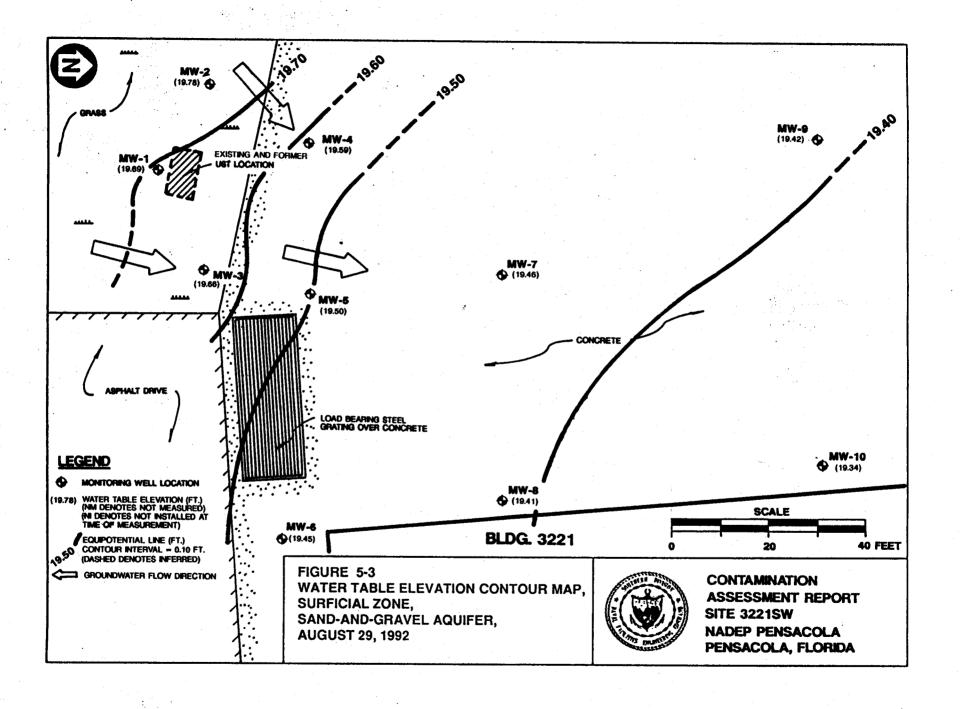


Table 5-4 Summary of Groundwater Sample Laboratory Analyses, January 25, 1992

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Compound	State Target Level or Guidance Concentration	MW1	MW1 Duplicate	PZ1	PZ2	PZ3	Equip- ment Blank	Trip Blank	Labora- tory Blank
Toluene ¹		ND	ND	ND	16	16	ND	3	ND
Total VOA	² 50	ND	ND	ND	16	16	ND	3	ND
Methylene chloride	³ 5	12	18	13	15	79	13	14	8
Chloroform	³100	ND	ND	ND	3	ND	ND	ND ,	ND
PCE	³3	ND	ND	ND	15	9	ND	ND	ND
Dibromochloromethane		ND	ND	ND	. 1	ND	ND	ND	ND
Acetone	³700	ND	ND	ND	ND	ND	13	ND	NA
Trichlorofluoromethane	³2,400	ND	ND	ND	ND	ND	ND	2	ND

¹Detected in trip blank.

Notes: Concentrations are in parts per billion (ppb).

Duplicate sample was collected from monitoring well MW-1.

ND = not detected.

Total VOA = total volatile organic aromatics; the sum of benzene, ethylbenzene, toluene, and xylenes.

PCE = tetrachloroethene.

NA = not analyzed.

²State target level (Florida Department of Environmental Regulation [FDER], Florida Administrative Code [FAC]).

³Guidance concentration recommended by FDER (February 1989).

Table 5-5 Summary of Groundwater Sample Laboratory Analyses, April 15, 1992

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Compound	State Target Level or Recommended Guidance Concentration	MW1	MW1 Duplicate	MW2	MW3	MW4	MW5	Equipment Blank	Trip Blank	Labora- tory Blank
Chloroform	1100	ND	ND	ND	1	ND	ND	ND	ND	ND
Methylene chloride	¹ 5	ND	ND	ND	ND	ND	13	ND	ND	1
PCE	¹ 3	ND	ND	ND	8	1	6	ND	ND	ND
Lead	² 50	ND	6	ND	ND	ND	ND	ND	ND	ND
Tentatively identified compounds (TICs)										
and their estimated concentrations										
Butylcyclobutane		16	19	ND	ND	11	ND	ND	NA	ND
1-Methylethyl benzene		ND	ND	ND	ND	ND	9	ND	NA.	ND
1,2-Diethyl benzene		ND	ND	ND	ND	ND	37	ND	NA.	ND
1,3-Diethyl benzene		ND	ND	ND	ND	ND	21	ND	NA	ND
1,4-Diethyl benzene		ND	ND	ND 1	ND	ND	13	ND	NA	ND
1-Methyl-3-(1-methylethyl benzene)		ND	ND	ND	ND	ND	77	ND	NA	ND
1-Methyl-4-(1-methylethyl benzene)		ND	ND	ND	ND	ND	66	ND	NA	ND
1-Ethyl-2,3-dimethyl benzene		ND	ND	ND	ND	ND	28	ND	NA	ND
1-Ethyl-3,5-dimethyl benzene		ND	ND	ND	ND	ND	18	ND	NA	ND
2-Ethyi-1,4-dimethyi benzene		ND	ND	ND	ND	ND	29	ND	NA	ND
4-Ethyl-1,2-dimethyl benzene		ND	ND	ND	ND	ND	57	ND	NA	ND
1,3,5-Trimethyl benzene		ND	ND	ND	ND	ND	150	ND	NA	ND
1,2,3,4-Tetramethyl benzene		ND	ND	ND	ND	ND	35	ND	NA	ND
1-Octanol		ND	ND	ND	ND	ND	15	ND	NA	ND
2,3-Dihydro-1-methyl-1H-indene		ND	ND	ND	ND	ND	25	ND	NA	ND
2,3-Dihydro-4-methyl-1H-indene		ND	ND	ND	ND	ND	13	ND	NA	ND
1,2,3,4-Tetrahydro-naphthalene		ND	ND	ND	ND	ND	8	ND	NA	ND
1-(4-Methylphenyl) ethanone		ND	' ND	ND	ND	ND	19	ND	NA	ND
Total TICs		16	19	0	0	11	620	0	0	0

¹Guidance concentration recommended by Florida Department of Environmental Regulation (FDER) (February 1989). ²State target level FDER, Chapter 17-770, Florida Administrative Code [FAC]).

Notes: Concentrations are in parts per billion (ppb).

PCE = tetrachloroethene.

ND = not detected.

NA = not analyzed.

Table 5-6 Summary of Groundwater Sample Laboratory Analyses, August 29, 1992

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Compound	Recommended Guidance Concentration ¹	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW8 Duplicate	MW9	MW10
Methylene chloride ²	5	5	10	7	7	7	8	8	10	10	10	11
TCE	3	ND	ND	, ND	ND	, ND	ND	4	ND	ND	5	25
PCE	3	ND	ND	ND	ND	ND	ND	ND	3	4	ND	ND
bis(2-Ethylhexyl)phthalate	14	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND
Tentatively identified compounds (TICs)												
and their estimated concentrations												
1-Methyl-2-(1-methylethyl)benzene		ND	ND	ND	ND	ND	6	ND	ND	ND	ND	ND
1-Methyl-3-(1-methylethyl)benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Methyl-4-(1-methylethyl)benzene		ND	ND	ND	ND	ND	6	ND	10	ND	ND	ND
1,3,5-Trimethyl-benzene		ND	ND	ND	ND	100	13	ND	34	29	ND	ND
1,2,3,4-Tetramethyl-benzene		ND	ND	ND	ND	15	ND	ND	5	ND	ND	ND
1,2,3,5-Tetramethyl-benzene		ND	ND	ND	ND	21	ND	ND	6	ND	ND	ND
1-Ethyl-2-methyl-benzene		ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND
1,2-Diethyl-benzene		ND	ND	ND	ND	20	ND	ND	8	7	ND	ND
1,3-Diethyi-benzene		ND	ND	ND	ND	11	ND	ND	ND	. ND	ND	ND
4-Ethyl-1,2-dimethyl-benzene		ND	ND	ND	ND	24	ND	ND	9	ND	ND	ND
2-Ethyl-1,3-dimethyl-benzene		ND	ND	ND	ND	42	ND	ND	ND	ND	ND	ND
2-Ethyl-1,4-dimethyl-benzene		ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND
1-Ethyl-2,4-dimethyl-benzene		ND	ND	ND	ND	ND	ND	ND	ND	9	ND	ND
Substituted benzene		ND	ND	ND	ND	14	ND	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethene		ND	ND	ND	ND	ND	ND	ND	ND	12	ND	ND
2,3-Dihydro-1-methyl-1H-idene		ND	ND	ND	ND	26	ND	ND	12	9	ND	ND
Heptadecane-(8)-carbonic acid(1)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13
Unknown (1)		ND	ND	ND	11	ND	ND	ND	ND	ND .	ND	19
Total TICs		0	0	0	11	284	32	0	84	66	0	32

Notes: Concentrations are in parts per billion (ppb).

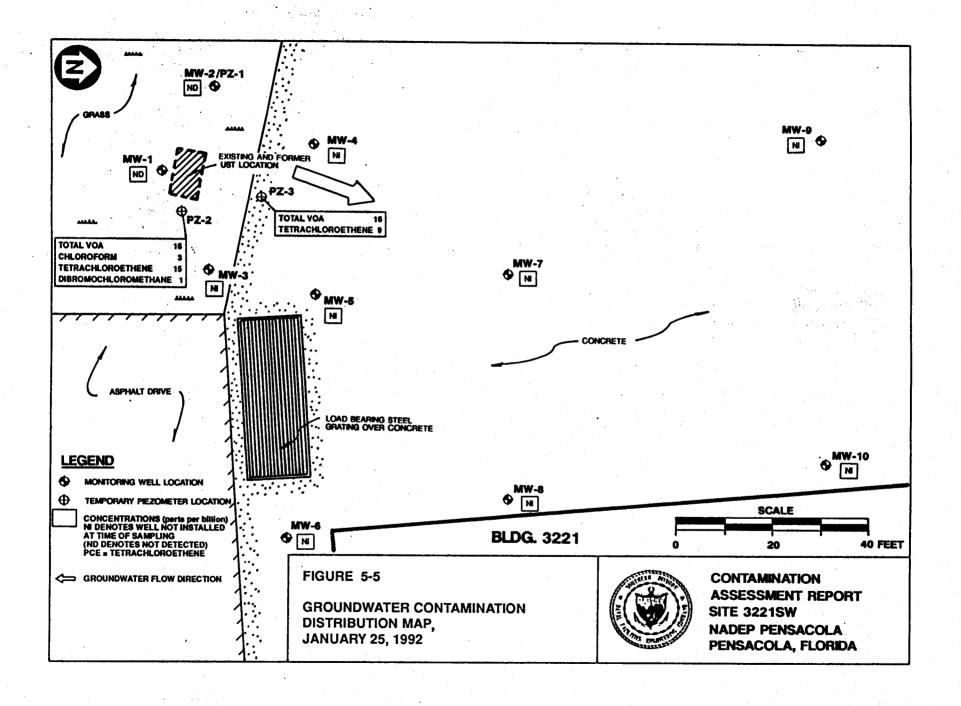
TCE = trichloroethene.

ND = not detected.

PCE = tetrachloroethene.

¹Guidance concentration recommended by Florida Department of Environmental Regulation (February 1989).

²Methylene chloride detected in laboratory blank, trip blank, and equipment blank at 11 parts per billion (ppb), 10 ppb, and 3 ppb, respectively.



Methylene chloride was detected in samples collected from all wells during this sampling event at concentrations ranging from 12 to 79 ppb. This contaminant was also detected in the trip blank, equipment blank, and laboratory blank at concentrations ranging from 8 ppb to 14 ppb. Because methylene chloride is a common laboratory contaminant and is present in the blanks associated with the sampling event, its presence in the samples can be attributed to laboratory contamination.

5.2.2.2 Groundwater Laboratory Analytical Results, April 15, 1992, Sampling Event The distribution of contaminants detected in groundwater samples collected on April 15, 1992, is shown in Figure 5-6. Compounds detected in samples collected from monitoring wells include lead, chloroform, methylene chloride, and PCE.

Lead was detected only in the duplicate sample collected from well PEN-3221SW-MWl at a concentration of 6 ppb. This concentration is well below the State target level of 50 ppb for lead.

Chloroform was detected in samples from only one well, PEN-3221SW-MW3, at a concentration of 1 ppb. This concentration is well below the State recommended guidance concentration of 100 ppb.

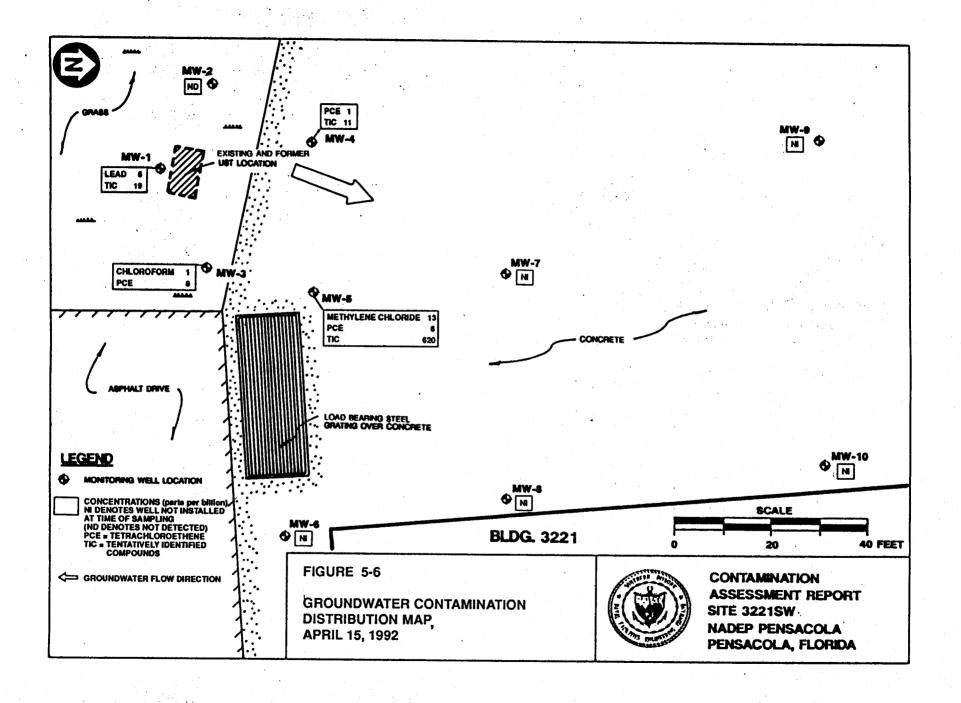
Methylene chloride was detected in monitoring well PEN-3221SW-MW5 and the laboratory blank at concentrations of 13 ppb and 1 ppb, respectively. Methylene chloride is a common laboratory contaminant and concentrations found in groundwater samples may range up to 10 times the concentration found in the laboratory blanks. The low concentrations of methylene chloride detected in groundwater samples may be the result of laboratory analytical processes.

PCE was the only contaminant detected in concentrations exceeding State recommended guidance concentrations. PCE was detected in the samples collected from wells PEN-3221SW-MW3, PEN-3221SW-MW4, and PEN-3221SW-MW5 with reported concentrations of 8 ppb, 1 ppb, and 6 ppb, respectively. Monitoring well PEN-3221SW-MW5 was the farthest downgradient well at the time of sampling.

Seventeen tentatively identified compounds (TIC) were detected in the sample collected from monitoring well PEN-3221SW-MW5 (see Table 5-5). These compounds appear to be breakdown products of fuel.

Butylcyclobutane was tentatively identified in the samples collected from monitoring wells PEN-3221SW-MW1 and PEN-3221SW-MW4. Butylcyclobutane is a possible breakdown product of fuel.

Because PCE is not currently regulated under Chapter 17-770, FAC, guidelines and was identified in several samples at concentrations above recommended guidance concentrations, site investigation was halted. A meeting was held with FDER and the USEPA to decide the manner of future investigations at the site. It was decided that the investigation could continue under Chapter 17-770, FAC, guidelines. The investigation at Site 3221SW resumed in August 1992.



5.2.2.3 Groundwater Laboratory Analytical Results, August 29, 1992, Sampling Event The distribution of contaminants detected in groundwater samples collected at the site on August 28, 1992, is shown in Figure 5-7. Compounds detected were methylene chloride, bis(2-ethylhexyl)phthalate, trichloroethene (TCE), and PCE (see Table 5-6).

Methylene chloride was detected in every sample, as well as the laboratory, trip, and equipment blanks. Concentrations ranged from 3 to 11 ppb. Because methylene chloride is a common laboratory contaminant and it was detected in the blanks associated with this sampling event, its presence in groundwater samples can be attributed to laboratory contamination.

Bis(2-ethylhexyl)phthalate was detected in only the sample collected from monitoring well PEN-3221SW-MW8 at a concentration of 10 ppb. The State recommended guidance concentration for bis(2-ethylhexyl)phthalate is 14 ppb. Bis(2-ethylhexyl)phthalate is a plasticizer, and its presence may be the result of contamination from the plastic gloves used during sample collection.

PCE and TCE were both detected at concentrations at or exceeding State recommended guidance concentrations. The State recommended guidance concentration for both PCE and TCE is 3 ppb. PCE was detected in only the sample collected from monitoring well PEN-3221SW-MW8 at a concentration of 3 ppb. TCE was detected in samples collected from wells PEN-3221SW-MW7, PEN-3221SW-MW9, and PEN-3221SW-MW10 at concentrations of 4 ppb, 5 ppb, and 25 ppb, respectively.

Eighteen TICs were detected in the samples collected from monitoring wells PEN-3221SW-MW4, PEN-3221SW-MW5, PEN-3221SW-MW6, PEN-3221SW-MW8, and PEN-3221SW-MW10. These compounds appear to be primarily fuel breakdown products.

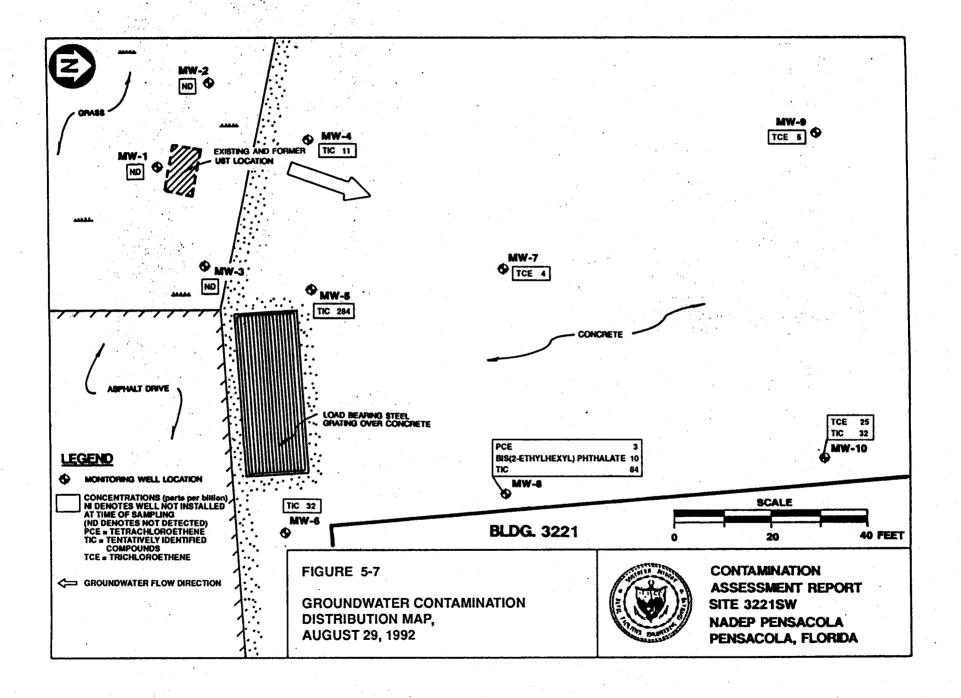
5.2.2.4 Groundwater Sample Analyses Summary Lead, toluene, methylene chloride, PCE, and TCE were identified in groundwater samples collected from April through August 1992.

Only methylene chloride, PCE, and TCE were detected at concentrations exceeding State recommended guidance concentrations. Because methylene chloride is a common laboratory contaminant and was detected in blanks associated with the sampling events, its presence can be attributed to laboratory contamination.

PCE was detected in samples collected from each sampling event. The reported concentrations, however, appear to have decreased since the initial sampling event. For example, in April 1992 PCE was detected in the samples collected from monitoring wells PEN-3221SW-MW3 and PEN-3221SW-MW5. In August 1992, PCE was not detected in the samples collected from these two wells. PCE was detected in only the sample collected from monitoring well PEN-3221SW-MW8, at a concentration that did not greatly exceed State recommended guidance concentrations.

TCE was detected only in samples collected from monitoring wells PEN-3221SW-MW7, PEN-3221SW-MW9, and PEN-3221SW-MW10 during the August 1992 sampling event.

Twenty-eight possible fuel breakdown products were tentatively identified during the April and August 1992 sampling events. Because the TICs are potential breakdown products of fuel, the former UST is a possible source of these contaminants.



PCE and TCE appear to be the only groundwater contaminants of concern at the site. The extent of PCE and TCE groundwater contamination is presently unknown. Because PCE and TCE were not detected in samples collected from monitoring wells in the vicinity of and immediately downgradient to the former UST location and are not associated with other petroleum contaminants, it appears unlikely that the former UST is the source of this contamination. A possible source is the flammable liquid storage area located approximately 100 feet west of these wells (see Figure 5-8).

5.3 POTABLE WELL SURVEY. A potable well survey was conducted to assess the risk of contamination of potable water supplies from activities at Site 3221SW. Two potable supply wells (designated as Well No. 1 and Well No. 2 in Figure 5-9) were identified at NAS Pensacola (Wilkins and others, 1985). The NAS Pensacola water supply system is used in conjunction with the Corry Field water supply system, which is located approximately 2 miles north of NAS Pensacola. According to NADEP personnel, the two NAS Pensacola wells are not currently used for potable water supply at NAS Pensacola, but are available as reserve potable water supplies should the need arise.

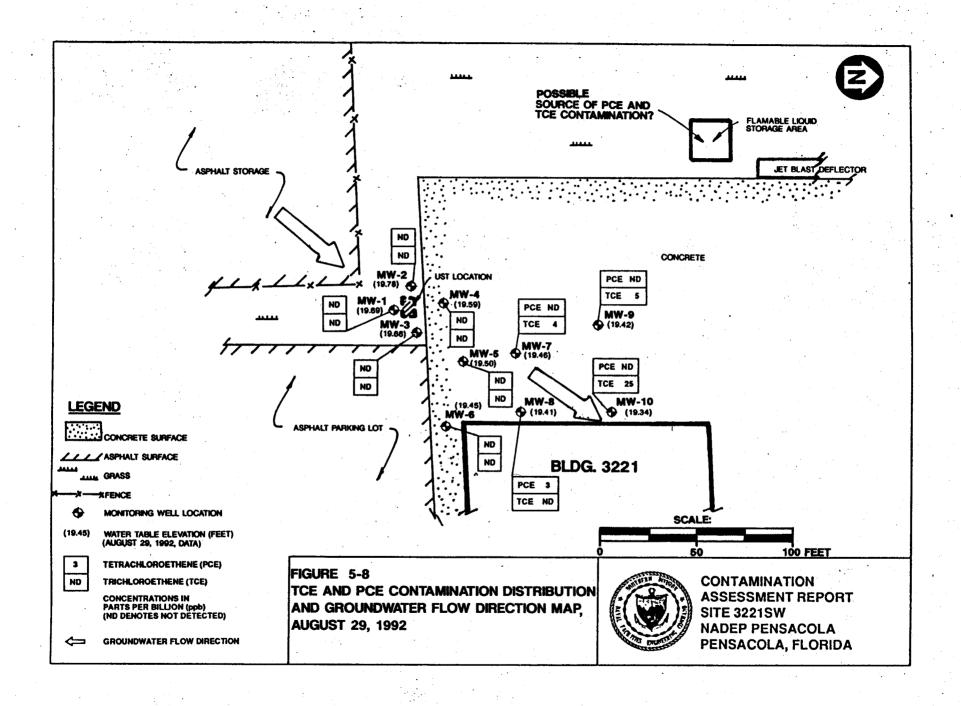
Potable well inventory data are presented in Table 5-7. Both wells at NAS Pensacola are screened in the main producing zone of the sand-and-gravel aquifer at depths ranging from 105 to 160 feet bls. There are no potable wells within a 0.25-mile radius of the site. The possibility of contamination of potable water sources from routine activities at Site 3221SW does not appear likely.

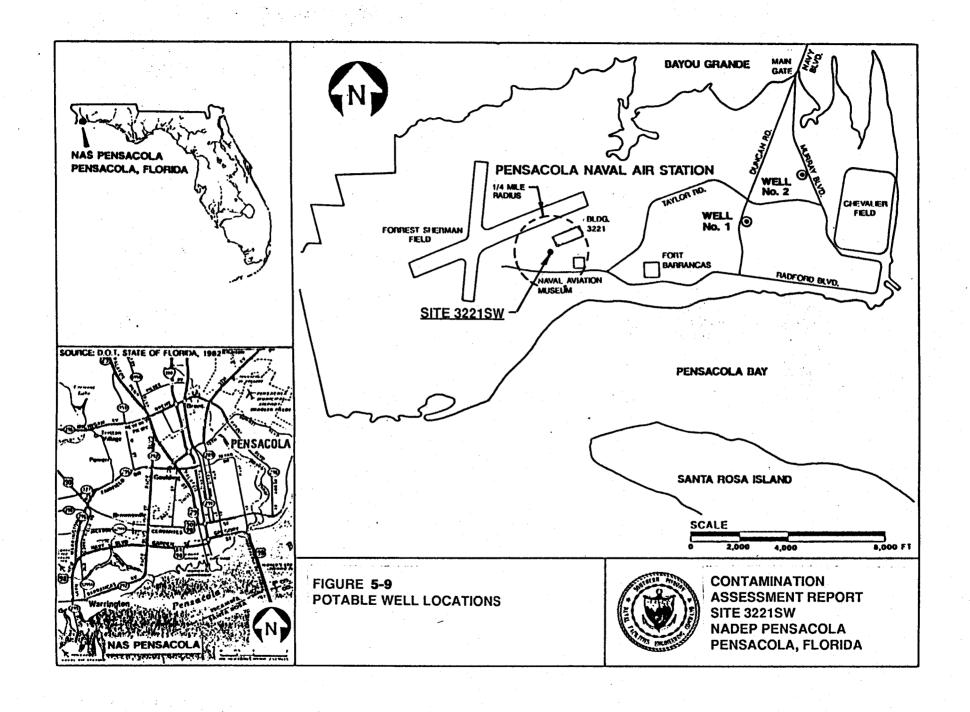
Table 5-7
Potable Well Inventory Data,
Naval Air Station, Pensacola, Florida

Contamination Assessment Report Site 3221SW, Naval Aviation Depot Pensacola, Florida

Well Identification Number/Local Name	Location	Total Depth (feet bls)	Screened Interval (feet bls)	Diameter Casing/Screen (inches)
302116087170201/No. 1	Sec. 1,T3S,R30W Duncan and Taylor Roads	174	105-160	24/12
302124087163601/No. 2	Sec. 1,T3S,R30W Murray and Farrar Roads	178	110-160	24/12

Note: bls = below land surface.





6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

- <u>6.1 SUMMARY</u>. Based on evaluation of field data and laboratory analytical results, the following is a summary of conditions at the site.
 - The sediments encountered during drilling operations are predominantly comprised of very fine-grained to fine-grained quartz sand. These sediments are part of the surficial zone of the sand-and-gravel aquifer (Roaza and others, 1991).
 - Groundwater beneath the site was encountered at depths ranging from approximately 7 to 9 feet bls and is classified as G-II.
 - The direction of groundwater flow in the surficial zone ranges from north to northeast.
 - The calculated average hydraulic gradient across the site is $5.6 \mathrm{x} 10^{-3}$ ft/ft.
 - The calculated average hydraulic conductivity at the site is 5.7×10^1 ft/day.
 - The calculated average pore water velocity is 1.2 ft/day.
 - OVA headspace analyses of soil samples indicate no soil petroleum contamination is evident.
 - Laboratory total metals and TRPH analyses of soil samples indicate that soil contamination is minimal.
 - Laboratory analyses of groundwater samples from the most recent sampling event of August 29, 1992, indicate that methylene chloride, TCE, and PCE are the only contaminants present in concentrations exceeding State recommended guidance concentrations.
 - Concentrations of TCE and PCE compounds exceeded State recommended guidance concentrations in samples collected from monitoring wells PEN-3221SW-MW7, PEN-3221SW-MW8, PEN-3221SW-MW9, and PEN-3221SW-MW10. TCE and PCE were not detected in samples collected from monitoring wells immediately downgradient of the UST site.
 - No potable water wells were identified within a 0.25-mile radius of the site.
- 6.2 CONCLUSIONS. The level of soil and groundwater contamination in the vicinity of the UST appears to be minimal. Groundwater contaminants exceeding State target levels or recommended guidance concentrations are methylene chloride, TCE, and PCE. The presence of methylene chloride can be attributed to laboratory contamination. Because TCE and PCE were not detected in samples collected from wells immediately downgradient of the UST location, and because these compounds were not associated with other petroleum constituents or derivatives, it appears the UST is not the source of this contamination. A

possible source of TCE and PCE may be releases associated with the flammable liquid storage area located west of the site. Because no potable wells were identified within a 0.25-mile radius of the site, groundwater contamination found at Site 3221SW is not expected to affect local potable water supplies at the base.

6.3 RECOMMENDATIONS. Because the PCE and TCE contamination found at the site does not appear to be related to leakage from the former or present USTs at Site 3221SW, a No Further Action Plan (NFAP) is recommended for the UST located at Site 3221SW. However, further site investigation is needed to assess the areal and vertical extent of TCE and PCE contamination.

7.0 PROFESSIONAL REVIEW CERTIFICATION

The contamination assessment contained in this report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report was developed for the UST located at Site 3221SW at the Naval Aviation Depot, Naval Air Station, Pensacola, Florida, and should not be construed to apply to any other site.

Roger Durham Professional Geologist P.G. No. 001127

Date

REFERENCES

- Barr, G.L., 1987, Potentiometric surface of the Upper Floridan aquifer in Florida, May 1985: Florida Geological Survey Map Series No. 119.
- Bouwer, H., 1989, The Bouwer and Rice slug test, an update: Groundwater, vol. 127, p. 304-309.
- Bouwer, H., and Rice, R.C., 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: Water Resources Research, vol. 12, p. 423-428.
- Florida Department of Environmental Regulation, February 1989, Groundwater guidance concentrations: compiled by R. Merchant, Division of Water Facilities, 14 p.
- Florida Department of Environmental Regulation, May 1989, Groundwater monitoring parameters and pollution sources, Third edition: compiled by G.B. Watts, Bureau of Waste Cleanup, 116 p.
- Florida Department of Environmental Regulation, February 1991, Guidelines for assessment and remediation of petroleum contaminated soils: Division of Waste Management, 33 p.
- Florida Department of Environmental Regulation, May 1992, Guidelines for assessment and remediation of petroleum contaminated soils, revised: Division of Waste Management, 39 p.
- Florida Department of Transportation, 1982, Florida official transportation map: 1 sheet.
- Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 p.
- Geraghty & Miller, Inc., 1989, AQTESOLV™, aquifer test design and analysis: computer version 1.00.
- Healy, H.G., 1980, Potentiometric surface of the Upper Floridan aquifer in Florida: Florida Bureau of Geology Map Series 104.
- Marsh, O.T., 1966, Geology of Escambia and Santa Rosa Counties, western Florida panhandle: Florida Geological Survey Bulletin No. 46, 140 p.
- Musgrove, R.H., Barraclough, J.T., and Grantham, R.G., 1965, Water resources of Escambia and Santa Rosa Counties, Florida: Florida Geological Survey Report of Investigations No. 40, 102 p.
- Naval Aviation Depot, Pensacola, 1992, Telephone Directory: 32 p.
- Puri, H.S., and Vernon, R.O., 1964, Summary of the geology of Florida and a guidebook to the classic exposures: Florida Geological Survey Special Publication 5, revised, 312 p.

REFERENCES (Continued)

- Roaza, H.P., Pratt, T.R., Richards, C.J., Johnson, J.L., and Wagner, J.R., 1991, Conceptual model of the sand-and-gravel aquifer, Escambia County, Florida: Northwest Florida Water Management District Water Resources Special Report 91-6, 125 p.
- U.S. Geological Survey, 1970, Fort Barrancas Quadrangle: 7.5-minute topographic series.
- Wilkins, K.T., Wagner, J.R., and Allen, T.W., 1985, Hydrogeologic data from the sand-and-gravel aquifer in southern Escambia County, Florida: Northwest Florida Water Management District Technical File Report 85-2, 153 p.

APPENDIX A SITE CONDITIONS

Regional and Local Physiography

Florida is divided into four physiographic zones; the Coastal Lowlands, the Central Highlands, the Northern Highlands, and the Marianna Lowlands (Puri and Vernon, 1964). The Pensacola area lies entirely within the Coastal Lowlands zone, which closely parallels the Florida coastline. The Coastal Lowlands are further divided into the Atlantic, Distal, and Gulf Coastal Lowlands (Puri and Vernon, 1964). The Naval Aviation Depot (NADEP) Pensacola is located within the Gulf Coastal Lowlands. The lowlands are characterized by poor drainage and elevations less than 100 feet above mean sea level. Landforms include barrier islands, estuaries, coastal ridges, dunes, and valleys (Puri and Vernon, 1964).

Land surface altitudes at NADEP Pensacola range from sea level at the coast to greater than 30 feet above mean sea level. Surface drainage is variable, but is generally toward the nearest body of water.

Regional Hydrogeology

NADEP Pensacola is underlain by three water bearing zones. These zones include the sand-and-gravel aquifer, the Upper Floridan aquifer, and the Lower Floridan aquifer.

The sand-and-gravel aquifer is comprised of Pleistocene terrace deposits, the Pliocene Citronelle Formation (Marsh, 1966), and Miocene coarse clastics. These deposits extend from the surface to a depth of approximately 400 feet below land surface (bls) and are predominantly poorly sorted, fine-grained to coarse-grained sand interbedded with numerous layers of clay and gravel (up to 60 feet thick). There is great lithologic variability in these deposits. Clay lenses and the presence of hardpan layers within the sand-and-gravel aquifer result in the occurrence of perched water tables and artesian conditions in some areas (Musgrove and others, 1965). Groundwater flow is generally topographically controlled. Recharge to the aquifer is derived almost entirely from local rainfall. The sand-and-gravel aquifer is the sole source of potable groundwater in the Pensacola area (Roaza and others, 1991).

The sand-and-gravel aquifer is divided into three major zones: the surficial zone, the low permeability zone, and the main producing zone (Roaza and others, 1991). These designations are based on changes in permeability of the sediments comprising each zone. The surficial zone is the uppermost layer of the aquifer. It consists primarily of sand and gravel with occasional silt and clay deposits. This zone ranges in thickness from 0 to 150 feet (Roaza and others, 1991). The low permeability zone, which underlies the surficial zone, consists of various mixtures of clay, silt, sand, and gravel. Locally, this zone contains poorly sorted sand, with gravel and some clay (Roaza and others, 1991). The thickness of the zone varies from 50 to 100 feet. Individual beds of the low permeability zone are highly discontinuous, and in some areas there may be hydraulic connection between the surficial zone and the main producing zone. producing zone is composed of moderate to well sorted sand-and-gravel beds that are typically interbedded with beds of fine-grained sand and clay. Locally, this zone typically contains medium-grained sand and sandy clays (Roaza and others, 1991). The thickness of the main producing zone ranges from 200 to 300 feet.

The Upper Floridan aquifer is comprised of deposits correlative to the lower Miocene Tampa Formation and the upper Oligocene Chickasawhay Formation. These two formations are undifferentiated in the Pensacola area. Locally, these deposits are approximately 380 feet thick (Marsh, 1966) and are typically brown to light gray, hard, fossiliferous dolomitic limestone or dolomite with a distinctive spongy-looking texture. Locally, the overlying Pensacola Clay is approximately 1,000 feet thick and forms an effective confining unit between the sand-and-gravel aquifer and the Upper Floridan aquifer (Marsh, 1966). This confining unit has also been designated as part of the Intermediate System (Roaza and others, 1991). The Upper Floridan aquifer is recharged by local rainfall in Conecuh, Escambia, and Monroe Counties, Alabama (Healy, 1980). General groundwater flow in the Upper Floridan aquifer is to the southeast toward the Gulf of Mexico (Barr, 1987). The groundwater in the Upper Floridan aquifer is mineralized in the Pensacola area and is not used as a water supply.

The Lower Floridan aquifer is comprised of upper to middle Eocene limestones. The aquifer is approximately 500 feet thick in the vicinity (Marsh, 1966). The limestones are typically white to grayish cream, soft, and chalky. The Lower Floridan aquifer is confined from above by the Bucatunna Clay Member of the middle Oligocene Byram Formation and from below by gray shales and clays of middle Eocene age. The Bucatunna Clay, also called the Intermediate Zone, is approximately 170 feet thick in the Pensacola area (Musgrove and others, 1965). Groundwater flow in the aquifer is to the southeast toward the Gulf of Mexico (Healy, 1980). The water quality is poor because of high mineralization.

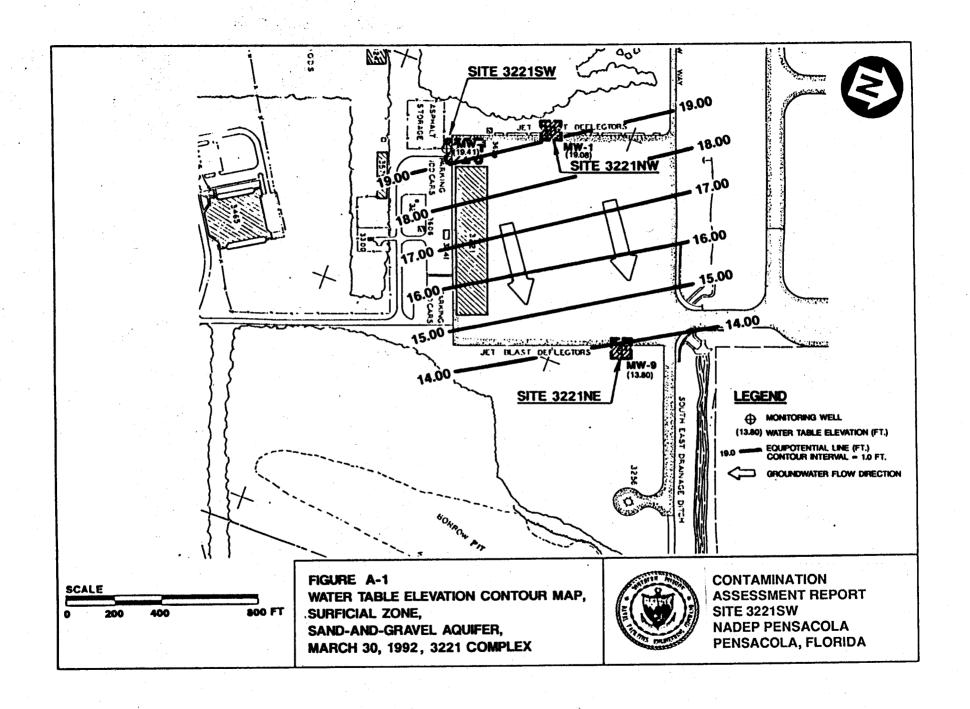
Local Hydrogeology

The surficial zone of the sand-and-gravel aquifer is the interval of primary concern at NAS Pensacola. The surficial zone extends from the surface to a depth of approximately 100 feet bls (Roaza and others, 1991). Soils from 0 to 50 feet bls encountered in investigations performed by ABB-ES at the NADEP facility are generally composed of fine-grained to very fine-grained sand, with very little silt and clay. Occasional coarse-grained sand to fine-grained gravel were encountered, and thin peat layers were found at NAS Pensacola in the Forrest Sherman Field vicinity.

Groundwater in the surficial zone is non-artesian and is encountered at depths ranging from less than 2 feet bls to greater than 20 feet bls at the NADEP facility. The depth to groundwater is mainly controlled by topography. Recharge is predominantly from local rainfall.

Figure A-1 shows the groundwater flow direction in the site vicinity on March 30, 1992, based on NADEP-wide measurements. The direction of groundwater flow in the site vicinity is predominantly to the east northeast, although variations in topography, the presence of surface water bodies, and perched water tables result in localized changes in the groundwater flow direction.

Perched water tables were observed in the Forrest Sherman Field area, west of 3221SW. Perched water tables are apparently the result of lower permeability peat layers found in this area. Perched water tables were not observed at Site 3221SW.



Locally, hydraulic gradients in the surficial zone vary from approximately 1×10^{-3} feet per feet (ft/ft) to 7×10^{-3} ft/ft. Gradients are generally less in the lower flat-lying areas than in the topographically higher areas to the northwest of Chevalier Field, approximately 2 miles east of site 3221SW. Additional water level measurements, taken on numerous occasions at low-elevation sites located near Pensacola Bay, indicate tidal fluctuations do not appear to alter the groundwater flow direction and do not appear to have a great effect on hydraulic gradients at NAS Pensacola.

APPENDIX B LITHOLOGIC LOGS

TITLE: NADEP Pensacola	LOG of WELL: PEN-3221SV	N-MW1 BORING NO. SB1
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7527-30
CONTRACTOR: Groundwater Protection	Inc. DATE STARTED: 1	/7/92 COMPLTD: 1/7/92
METHOD: 4.25" HSA	CASE SIZE: 2 inches SCREEN INT.: 4.	75-14.75' PROTECTION LEVEL: D
FOC ELEV.: 27.00 FT.	MONITOR INST.: OVA TOT DPTH: 14.75F	T. DPTH TO ¥ 7.31 FT.
.OGGED BY: R. Durham	WELL DEVELOPMENT DATE: 1/7/92	SITE: 3221SW
SAMPLE SAMPLE SAMPLE FIT. HEADSPACE (6pm)	SOIL/ROCK DESCRIPTION AND COMMENTS	SYMBOL SYMBOL SOIL CLASS 199/58 199/58
5— SAN qua	ID: tan to off-white, very fine- to fine-grained, rtz, some shell fragments.	3,3,3,5
- 14/24 0 SAN wet.	D: off-white, very fine- to fine-grained, quartz,	3,3,4,5
fine	D W/ PEAT: brown to dark gray, very fine— to -grained, mixed with organics, dark brown t—like material from 16—16.3'.	5,8,7,9

TITLE: NADEP Pensacola ,		LOG of WELL: PEN-3221	SW-MW2	BORII	NG NO. SB2	,
CLIENT: SOUTHNAVFACENGCOM				PROJE	ECT NO: 7527-30	
CONTRACTOR: Groundwater Protect	ion Inc.	DATE STARTED	: 1/7/92		COMPLTD: 1/7/9:	2
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.:	4.65-14.65'	PROTE	CTION LEVEL: D	
OC ELEV.: 26.94 FT.	MONITOR INST.: OVA	TOT DPTH: 14.65	5FT.	DPTH '	TO Ţ 7.16 FT.	
OGGED BY: R. Durham	WELL DEVELOPMENT DA	TE: 1/7/92		SITE:	3221SW	
SAMPLE SAMPLE RECOVERY (PDM)	SOIL/ROCK DES AND COMM		LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	SAND: light brown to orange—fine—grained. SAND: off—white to light tan, with the content of the	very fine- to ed (from 10-11.2'), 12'), very fine- to		PT	4,5,5,8 1,2,2,2	

TITLE: NADEP Pensacola		LOG of WELL: PEN-3	221SW-MW3	BORING I	NO. SB6		
CLIENT: SOUTHNAVFACENGO	ОМ			PROJECT NO: 7527-30			
CONTRACTOR: Groundwater Pr	rotection Inc.	DATE START	ED: 4/9/92	·	OMPLTD: 4/9/9	2	
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT	.: 5.02-15.02'	PROTECTI	ION LEVEL: D		
TOC ELEV.: 27.29 FT.	MONITOR INST.: OVA	TOT DPTH: 1	5.02FT.		Ţ 7.63 FT.		
LOGGED BY: R. Durham	WELL DEVELOPMENT		,	SITE: 322			
DEPTH FIT. SAMPLE OF SAMPLE SAMPLE		DESCRIPTION DMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA	
-	SAND: Brown to tan, very	fine- to fine-grained.		SP			
5—	0				- , ·		
0	- SAND: Brown to white, wet.				4,4,3,3		
5	- SAND: White, peat at base	of spoon, wet.		PT	12,5,5,3		

CLIENT: SOUTHNAVFACENGEOM CONTRACTOR: Groundwater Protection Inc. METHOD: 4.25" HSA CASE SIZE: 2 inches SCREEN INT.: 4.97—14.97 PROTECTION LEVEL: D TOC ELEV.: 28.73 FT. MONITOR INST.: OVA TOT DPTH: 14.97FT. DPTH TO \$7.14 FT. LOGGED BY: R. Durham WELL DEVELOPMENT DATE: 4/6/92 SIZE: 322ISM SOUL/ROCK DESCRIPTION AND COMMENTS SP 18/24 O SAND: White to tan, very fine— to fine-grained.	TITLE: NADEP Pensacola	LOG of	WELL: PEN-3221SW-MW4	BORING NO	. SB7
CONTRACTOR: Groundwater Protection Inc. DATE STARTED: 4/9/92 COMPLTD: 4/9/92 METHOD: 4.25" HSA CASE SIZE: 2 inches SCREEN INT.: 4.97-14.97' PROTECTION LEVEL: D TOC ELEV.: 26.73 FT. MONITOR INST.: OVA TOT DPTH: 14.97FT. DPTH TO \$7.14 FT. LOGGED BY: R. Durham WELL DEVELOPMENT DATE: 4/9/92 SITE: 322ISW SOIL/ROCK DESCRIPTION AND COMMENTS SP 18/24 O SAND: White to tan, very fine— to fine—grained.	CLIENT: SOUTHNAVFACENGCOM		74	PROJECT N	0: 7527-30
TOC ELEV.: 28.73 FT. MONITOR INST.: OVA TOT DPTH: 14.97FT. DPTH TO \$ 7.14 FT. SP SITE: 3221SW EL LABORATORY \$ 500 May 500 Ma	CONTRACTOR: Groundwater Protection	Inc.	DATE STARTED: 4/9/92	<u> </u>	······································
LOGGED BY: R. Durham WELL DEVELOPMENT DATE: 4/9/92 SITE: 322ISW LABORATORY BY	METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.: 4.97-14.97'	PROTECTION	I LEVEL: D
EL LABORATORY BY SUND BLOWS/6-IN AND COMMENTS SOTL/ROCK DESCRIPTION AND COMMENTS SOTL/ROCK DESCRIPTION AND COMMENTS BLOWS/6-IN 174 BLOWS/6-IN 174 SP 18/24 O SAND: White to tan, very fine- to fine-grained.	TOC ELEV.: 26.73 FT.	MONITOR INST.: OVA	TOT DPTH: 14.97FT.	DPTH TO V	7.14 FT.
5— 18/24 O SAND: White to tan, very fine— to fine—grained.	LOGGED BY: R. Durham	WELL DEVELOPMENT DATE: 4/9	9/92		
5— IB/24 0 SAND: White to tan, very fine- to fine-grained.	DEPTH FT. SAMPLE SAMPLE HEADSPACE (ppm)		LITHOLOGIC SYMBOL	SOIL CLASS	WELL DATA
SAND: Same as above, peat at base of spoon. 5,4,10,14	5— 18/24 O SAN		e-grained.	SP 5,	1,1,2,4

	LOG of WE	ELL: PEN-3221SW-MW5	BORING NO. SB8	
LIENT: SOUTHNAVFACENGCOM			PROJECT NO: 7527-30	
ONTRACTOR: Groundwater Protection	Inc. D	ATE STARTED: 4/9/92	COMPLTD: 4/9/92)
ETHOD: 4.25" HSA	CASE SIZE: 2 inches S	CREEN INT.: 4.95-14.95'	PROTECTION LEVEL: D	
OC ELEV.: 27.10 FT.	MONITOR INST.: OVA T	OT DPTH: 14.95FT.	DPTH TO ¥ 7.60 FT.	
OGGED BY: R. Durham	WELL DEVELOPMENT DATE: 4/9/9	92	SITE: 3221SW	
SAMPLE SAMPLE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC	SOIL CLASS BIOMOS/6-IN	WELL DATA
5— 20/24 0 SAN odo	ID: White to brown, very fine– to fine	grained.	3,3,4,4 2,1,1,2	

CLIENT: SOUTHNAY-ACKINGOM CONTRACTOR: Stroundwater Protection Inc./Orlando, FL DATE STARTED: 8/25/92 COMPLTD: 8/25/92 METHOD: 4:25'HSA CASE SIZE: 2 Inches SCREEN INT.: 5.0-18.0" DPTH TO \$ 8.05 FT. MONITOR INST.: 0VA TOT DPTH: ISFT. DPTH TO \$ 8.05 FT. STITE: 322/5K TOC ELEV: 27.50 FT. MONITOR INST.: 0VA TOT DPTH: ISFT. DPTH TO \$ 8.05 FT. SITE: 322/5K TOC ELEV: 27.50 FT. MONITOR INST.: 0VA TOT DPTH: ISFT. DPTH TO \$ 8.05 FT. SITE: 322/5K TOC ELEV: 27.50 FT. CONCRETE SAND: BITE: 322/5K CONCRETE SAND: SAND: Bight brown to white, very fine- to fine-grained, mixed with shells. SAND: Bight brown to white, very fine- to fine-grained, mixed with shells.	TITLE: NADEP Pensacola	2014		LOG of	WELL: PEN-3221SI	W-MW6	 	ING NO. SB9	
METHOD: 4.25" HSA CASE SIZE: 2 inches SCREEN INT.: 5.0-15.0' PROTECTION LEVEL: D TOC ELEV.: 27.50 FT. MONITOR INST.: OVA TOT DPTH: 15FT. DPTH TO \$ 8.05 FT. SITE: 322!SW SITE: 322!SW LABORATORY B SOIL/ROCK DESCRIPTION AND COMMENTS BLOWS/6-IN SAND: brown, very fine- to fine-grained, mixed with shells. SP SAND: light brown to white, very fine- to fi	***		Inc. (Orienda, El		I		PRO		
TOC ELEV.: 27.50 FT. LOGGED BY: B. Anderson MELL DEVELOPMENT DATE: 8/26/92 SITE: 322ISW SOLL/ROCK DESCRIPTION AND COMMENTS SAMPLE ID. SOLL SAMPLE ID. SOL	·	rotection .							
EL LABORATORY STEEL SAMPLE ID. STEEL SAM									
EL LABORATORY AND COMMENTS SAMPLE ID. SOLL/ROCK DESCRIPTION AND COMMENTS CONCRETE CONCRETE SAND: brown, very fine- to fine-grained, mixed with shells. SAND: Brown, very fine- to fine-grained, mixed with shells.						-			
SAND: light brown to white, very fine— to fine—crained, slight brown to white, very fine— to fine—crained, slight sulfur order.			WELL DEVELOPMENT	DATE: 8/	26/92 			: 3221SW	
SAND: light brown to white, very fine- to fine-grained, slight sulfur order.	SAMPLE IT. THE SAMPLE TO S	HEADSPACE (ppm)			ION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
	5—-	SAN shell	ID: brown, very fine- to ls. D: light brown to white,	very fine		1			

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TITLE: NADEP Pensacola			LOG of WELL: PEN-32	221SW-MW7	BOR	ING NO. SB10	
CLIENT: SOUTHNAVFACENG	COM				PRO	JECT NO: 7527-40	
CONTRACTOR: Groundwater	Protection	on Inc./Orlando, FL	DATE START	ED: 8/25/92	1	COMPLTD: 8/25	/92
METHOD: 4.25" HSA		CASE SIZE: 2 inches	SCREEN INT.	.: 5.0-15.0	PROT	ECTION LEVEL: D	
OC ELEV.: 27.10 FT.		MONITOR INST.: OVA	TOT DPTH: 15	SFT.	DPTH	I TO ¥ 7.64 FT.	
OGGED BY: B. Anderson		WELL DEVELOPMENT	DATE: 8/25/92		SITE	: 3221SW	
SAMPLE SAMPLE	HEADSPACE (ppm)	SOIL/ROCK (AND CO		LITHOLOGIC	SOIL CLASS	BLOWS/6-IN	WELL DATA
5—	0	AND: white, very fine- to	fine-grained, loose, sar	mp.	SP		

TITLE: NADEP Pensacola		LOG of WELL: PEN-32	221SW-MW8	BORING	S NO. SB11
CLIENT: SOUTHNAVFACENGCOM	М			PROJEC	T NO: 7527-40
CONTRACTOR: Groundwater Pro	tection Inc./Orlando, FL	DATE START	ED: 8/25/92		COMPLTD: 8/25/92
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.	: 5.0-15.0'	PROTEC	TION LEVEL: D
TOC ELEV.: 27.69 FT.	MONITOR INST.: OVA	TOT DPTH: 15	FT.	DPTH TO) ♀ 8.28 FT.
LOGGED BY: B. Anderson	WELL DEVELOPMENT	DATE: 8/25/92		SITE: 32	2215W
FFTH FT SAMPLE SAMPLE RECOVERY		DESCRIPTION OMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	WELL DATA
5	SAND: brown, very fine— to shell material. SAND: light brown to white fine—grained, slight sulfur of	, very fine– to	(SP	
20		of 3221SW8 AE			_ SERVICES, INC.

CLIENT: SOUTHNAVFAC	CENGCOM		LOG of WELL: PEN-3		<u> </u>	NG NO. SB12	-
CONTRACTOR: Groundw		Inc /Orlando Fl	DATE START	FD: 8/27/02	, PRUJI	COMPLTD: 8/27/	
METHOD: 4.25" HSA		CASE SIZE: 2 inches			PROTE	ECTION LEVEL: D	92
TOC ELEV.: 27.28 FT.		MONITOR INST.: 0V				TO ¥ 8.86 FT.	
LOGGED BY: R. Durham		WELL DEVELOPMENT)[] .	-	3221SW	_
		WEEL DEVELOT MENT	DATE: 0/21/02		L	J2213W	
L LABORATORY SAMPLE ID. SAMPLE ID. SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK AND (DESCRIPTION COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	
-	Col	NCRETE			SP		
5—	0	,	ì			, · ,	
-		ID: white to light browl -grained.	n, very fine- to				
10-							
_							
15—						, .	
			V		•		
20-							

FITLE: NADEP Pensacola	LOG of	WELL: PEN-3221SW-MW10	BORING NO. SB13
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 7527-40
CONTRACTOR: Groundwater Protection 1	Inc./Orlando, FL	DATE STARTED: 8/27/92	COMPLTD: 8/27/92
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.: 5.0-15.0'	PROTECTION LEVEL: D
TOC ELEV.: 27.73 FT.	MONITOR INST.: OVA	TOT DPTH: 15FT.	DPTH TO ¥ 8.39 FT.
.OGGED BY: R. Durham	WELL DEVELOPMENT DATE: 8/2	7/92	SITE: 3221SW
SAMPLE SAMPLE (PPM)	. SOIL/ROCK DESCRIPTI AND COMMENTS	Z SYMBOL	SOIL CLASS SOIL CLASS WELL DATA
SAN fine	D: light brown to gray, very fine-grained. D: light gray to white, very fine-		
	•		

TITLE: NADEP Pensacola		LOG of WELL: PEN-	3221SW-PZ1	BORING NO. SE	32
CLIENT: SOUTHNAVFACENGCO	ОМ			PROJECT NO: 7	527-30
CONTRACTOR: Groundwater Pr	rotection Inc.	DATE STAF	RTED: 1/7/92	COMPLI	TD: 1/7/92
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN IN	T.: 7.0~17.0'	PROTECTION LE	VEL: D
TOC ELEV.: 29.94 FT.	MONITOR INST.: OVA	тот ортн:	17.0FT.	DPTH TO ¥ 10.5	5 FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT	DATE: 1/8/92		SITE: 3221SW	
SAMPLE ID. SAMPLE STANDERS FILE		DESCRIPTION OMMENTS	LITHOLOGIC	SOIL CLASS	WELL DATA
15/24	SAND: light brown to orang fine-grained. SAND: off-white to light b fine-grained. SAND: light brown, orange fine-grained, wet.	rown, very fine— to		SP 4,5,	5,8
20—	PAGE 1	of 3221SWIZ	ABB ENVIRON	' NMENTAL SER	VICES, INC.

TITLE: NADEP Pensacola	LO	G of WELL: PEN-3221S	W-PZ2	BORING	S NO. SB3	
CLIENT: SOUTHNAVFACENGCOM				PROJEC	T NO: 7527-30	
CONTRACTOR: Groundwater Protection	Inc.	DATE STARTED:	1/7/92		COMPLTD: 1/7/92	2
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.: 7.	0-17.0'	PROTEC	TION LEVEL: D	
TOC ELEV.: 30.20 FT.	MONITOR INST.: OVA	TOT DPTH: 17.0F	т.	DPTH TO	D ♀ 10.82 FT.	
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE	: 1/8/92		SITE: 32		
GEPTH FT. SAMPLE SAMPLE RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESC AND COMMEN		LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5— 15/24 O SAN 12/24 O CLA SAN 12/24 O CLA SAN	AYEY SAND: orange-red to yam and red mottled sandy classification of the sandy classification of the sandy classification of the sandy classification of the sand sand sand sand sand sand sand sand	ay at 5.7-6.0'. rained. rained wet.		SC SP SP	3,4,3,3 2,2,1,2	
	PAGE 1 of 3	221SW2Z ABB	ENVIRON	IMENTAL	SERVICES,	INC.

CLIENT: SOUTHNAYFACENSCOM CONTRACTOR: Groundwater Protection Inc. CASE SIZE: 2 inches SCREEN INT. 7.0-17.0* PROTECTION LEVEL: D TOC ELEV. 29 of PT. LOGGED BY: R. Durhain WELL DEVELOPMENT DATE: 1/9/92 STIE: 322/SW **ELL LABORATORY \$\frac{3}{2} \frac{1}{2} 1	TITLE: NADEP Pensacola		LOG of W	ELL: PEN-3221SW	-PZ3	BORIN	NG NO. SB4	
### CASE SIZE: 2 inches SCREEN INT.: 7.0-I7.0" PROTECTION LEVEL: D	CLIENT: SOUTHNAVFACENGCOM		<u> </u>			PROJE	ECT NO: 7527-30	
TOT DETH: 17.0FT. DPTH TO \$ 10.29 FT.	CONTRACTOR: Groundwater Protection	Inc.	D	ATE STARTED: 1/	8/92		COMPLTD: 1/8/92	2
EDGGED BY: R. Durham WELL DEVELOPMENT DATE: 1/9/92 SITE: 322/SW LABORATORY BY SUPERIOR SOIL/ROCK DESCRIPTION AND COMMENTS SP BLOWS/6-IN TO SP STORM STOR	METHOD: 4.25" HSA	CASE SIZE: 2 inches	s	CREEN INT.: 7.0	-17.0'	PROTE	CTION LEVEL: D	
SAND: white to light yellow-tan, very fine- to fine-grained. 12/24 0 SAND: off-white, very fine- to fine-grained.	TOC ELEV.: 29.67 FT. ,	MONITOR INST.: OVA	Т	OT DPTH: 17.0FT.	٠.	OPTH 1	T O ¥ 10.29 FT.	
CONCRETE SP SAND: white to light yellow-tan, very fine- to fine-grained. 24/24 SAND: off-white to light tan, very fine- to fine-grained. 10- 12/24 SAND: off-white, very fine- to fine-grained.	LOGGED BY: R. Durham	WELL DEVELOPMENT	DATE: 1/9/9	12		SITE:	3221SW .	
SAND: white to light yellow—tan, very fine— to fine—grained. 24/24 0 SAND: off—white to light tan, very fine— to fine—grained. 10— 12/24 0 SAND: off—white, very fine— to fine—grained. 12/24 10 PEAT: dark brown, organic odor.	DEPTH FT. SAMPLE SAMPLE HEADSPACE (ppm)			N	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
10— 12/24 0 SAND: off-white to light tan, very fine— to fine—grained. 12/24 0 SAND: off-white, very fine— to fine—grained.	- - sa	.ND: white to light yellow	v—tan, very f	ine- to		SP		
15————————————————————————————————————	24/24 0 SA	.ND: off-white to light to e-grained.	an, very fine	– to .			. •	
5—————————————————————————————————————				t.				
PEAT: dark brown, organic odor.	-	ND: off-white, very fine	to fine-gr	ained.			,	
	12/24 10	AT: dark brown, organic	odor.		<u></u>	PT	. •	
			v.			,		

		WELL: PEN-3221SW-PZ4	BORING NO. SB5
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 7527-30
CONTRACTOR: Groundwater Protection	Inc.	DATE STARTED: 1/13/92	COMPLTD: 1/13/92
METHOD: 4.25" HSA	CASE SIZE: 2 inches	SCREEN INT.: 10.0-20.0'	PROTECTION LEVEL: D
OC ELEV.: 33.62 FT.	MONITOR INST.: OVA	TOT DPTH: 20.0FT.	DPTH TO ♀ 14.18 FT.
OGGED BY: R. Durham	WELL DEVELOPMENT DATE: NA		SITE: 3221SW
SAMPLE SAMPLE RECOVERY (ppm)	SOIL/ROCK DESCRIPTI AND COMMENTS	2 LiTHOLOGIC SYMBOL	SOIL CLASS SOIL CLASS YELL DATA
5— SAN	ND: light brown to gray, fine— to me ND: light gray to white, fine— to me np to wet.	damp.	

TITLE: NADEP Pensacola	LOG	of WELL:	BORING NO. SB14
CLIENT: SOUTHNAVFACENGCOM	and the second second	-	PROJECT NO: 7527-30
CONTRACTOR: Groundwater Protectio	n Inc.	DATE STARTED: 12/28/92	COMPLTD: 12/28/92
METHOD: Hand auger	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 6.5FT.	DPTH TO ♀ FT.
LOGGED BY: R. Durham	WELL DEVELOPMENT DATE:		SITE: 3221SW
DEPTH DEPTH SAMPLE SAMPLE RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESCRI AND COMMENT		SOIL CLASS OIL CLASS WELL DATA
			SP
5— 0 SA	AND: tan to light brown, very fin artz, no odor	e- to fine-grained,	
0—			
5—			

METHOD: Hand auger CASE SIZE: SCREEN INT.: PROTECTION LEVEL: D TOC ELEV.: FT. MONITOR INST.: OVA TOT DPTH: 6FT. DPTH TO \$ FT. LOGGED BY: R. Durham WELL DEVELOPMENT DATE: SITE: 322ISM BLOWS/6-IN AND COMMENTS SP SAND: light brown, very fine— to fine—grained, no odor.	ITLE: NADEP Pensacola	LOG	of WELL:	*	BORI	NG NO. SB15	
METHOD: Hand auger CASE SIZE: SCREEN INT.: DPTH TO \$ FT. DPTH TO \$ FT. DOGGED BY: R. Durham WELL DEVELOPMENT DATE: SITE: 3221SW ELL LABORATORY BY SAMPLE ID.	LIENT: SOUTHNAVFACENGCOM			·	PROJ	ECT NO: 7527-30	
TOC ELEV.: FT. MONITOR INST.: OVA TOT DPTH: 6FT. DPTH TO \$ FT. SITE: 322ISW WELL DEVELOPMENT DATE: SITE: 322ISW LABORATORY AND COMMENTS SAMPLE ID. BLOWS/6-IN SAMPLE ID. SAMPLE ID. O SAND: light brown, very fine— to fine—grained, no odor.	ONTRACTOR: Groundwater Protection	Inc.	DATE STARTED: 12	/28/92		COMPLTD: 12/28	3/92
ELLABORATORY DATE: SITE: 322ISW SOIL/ROCK DESCRIPTION AND COMMENTS BLOWS/6-IN SP SAND: Right brown, very fine— to fine—grained, no odor.	ETHOD: Hand auger	CASE SIZE:	SCREEN INT.:		PROTE	CTION LEVEL: D	
SOIL/ROCK DESCRIPTION AND COMMENTS SP SAND: Hight brown, very fine— to fine—grained, no odor.	OC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 6FT.		DPTH	TO ♀ FT.	
SAND: light brown, very fine— to fine—grained, no odor. — X — — — — — — — — — — — — — — — — —	OGGED BY: R. Durham	WELL DEVELOPMENT DATE:			SITE:	3221SW	
SAND: light brown, very fine— to fine—grained, no odor.	FT. SAMPLE SAMPLE HEADSPACE (ppm)			LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
	- O SAN odo		fine-grained, no		SP		
]				,		
	;—————————————————————————————————————						

TITLE: NADEP Pensacola		LOG of	WELL:		BOR	ING NO. SB16	
CLIENT: SOUTHNAVFACENGCOM					PRO	JECT NO: 7527-30	
CONTRACTOR: Groundwater Protection	Inc.		DATE STARTED: 1	2/28/92		COMPLTD: 12/28,	/92
METHOD: Hand auger	CASE SIZE:		SCREEN INT.:		PROT	ECTION LEVEL: D	
TOC ELEV.: FT.	MONITOR INST.: OVA		TOT DPTH: 6FT.		DPTH	I TO ♀ FT.	, , , , , , ,
LOGGED BY: R. Durham	WELL DEVELOPMENT DA	ATE:			SITE	: 32215W	
DEPTH FT. SAMPLE SAMPLE HEADSPACE (ppm)	SOIL/ROCK DE AND COMI		ON	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
- o	ID: tan, very fine- to fine	e-graine	d, no odor.		SP		
5 — 0 0 — 0 — 0 — 0 — 0 — 0 — 0 — 0 — 0							
10—							
15—							

,

TITLE: NADEP Pensacola		LOG of	WELL:		BORI	(NG NO. SB17	
CLIENT: SOUTHNAVFACENGCOM					PROJ	ECT NO: 7527-30	
CONTRACTOR: Groundwater Protecti	ion Inc.		DATE STARTED:	12/28/92		COMPLTD: 12/28	/92
METHOD: Hand auger	CASE SIZE:		SCREEN INT.:		PROTI	ECTION LEVEL: D	
TOC ELEV.: FT.	MONITOR INST.: OVA		TOT DPTH: 6FT.		DPTH	TO Ţ FT.	
LOGGED BY: R. Durham	WELL DEVELOPMENT	DATE:			SITE:	3221SW	
DEPTH FT. SAMPLE SAMPLE HEADSPACE (ppm)	SOIL/ROCK AND CO	DESCRIPT DMMENTS	ION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
- - - - - 5	SAND: tan, very fine– to fi	ine-graine	ed, no odor.		SP .		
			5				
-							
	PAGE 1	of 3221	ISW17 ARR	FNVIRON	IMENT	AL SERVICES.	INC

. .

APPENDIX C INVESTIGATIVE METHODOLOGIES AND PROCEDURES

Soil Boring Methods

Boreholes were advanced using 4.25-inch inside diameter (ID), hollow-stem augers using a rotary drill rig. Discrete soil samples were collected from each borehole using a standard penetration test (SPT) split-spoon sampler. SPT samples were generally collected at 5-foot intervals to the total depth of the well. The soil samples collected above the water table were placed in 16-ounce glass jars and head space analyses were performed using an organic vapor analyzer (OVA) with a flame ionization detector (FID), following Florida Department of Environmental Regulation (FDER), Chapter 17-770.200(2), Florida Administrative Code (FAC), guidelines. Soil samples from below the water table were analyzed using a portable gas chromatograph (GC) calibrated to detect benzene, ethylbenzene, toluene, and xylene (BETX) to the part per billion (ppb) level. The purpose of the screening procedure was to optimize monitoring well placement during the investigation.

Monitoring Well Construction

Permanent monitoring wells were installed in 10 of the boreholes drilled at the site. Monitoring wells PEN-3221SW-MW1 through PEN-3221SW-MW10 are constructed of 2-inch ID, schedule 40, polyvinyl (PVC) casing with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen. PVC well casings extend from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 2 to 3 feet above the top of the screen. A 1- to 2-foot thick bentonite seal was then placed on top of the filter pack. The remaining annular space was grouted to the surface with a neat cement grout. A protective traffic-bearing vault was installed to complete each well location. In concreted areas, the well pad consists of 6-inch thick reinforced concrete around the traffic-bearing vault to the depth of the surrounding concrete. Each monitoring well is equipped with a locking well cap and a padlock. Figure C-1 depicts a typical monitoring well installation for the site.

Temporary monitoring wells were installed in four of the boreholes drilled at the site. Temporary wells PEN-3221SW-PZ1 through PEN-3221SW-PZ4 were constructed of the same casing and screen materials as permanent wells. The filter pack consisted of natural sand, and no grout or bentonite were used. After data collection, PEN-3221SW-PZ2 was upgraded to a permanent well, PEN-3221SW-MW2. The remaining temporary wells were removed and the boreholes were backfilled to the land surface with natural sand.

Water Level Measurements

Groundwater levels were measured using an electric water level indicator and an engineering tape divided into increments of 0.01 foot. The wells were checked for the presence of free product by visual observation of a groundwater sample taken from each well using an extruded Teflon^M bailer. Water level elevations were calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing.

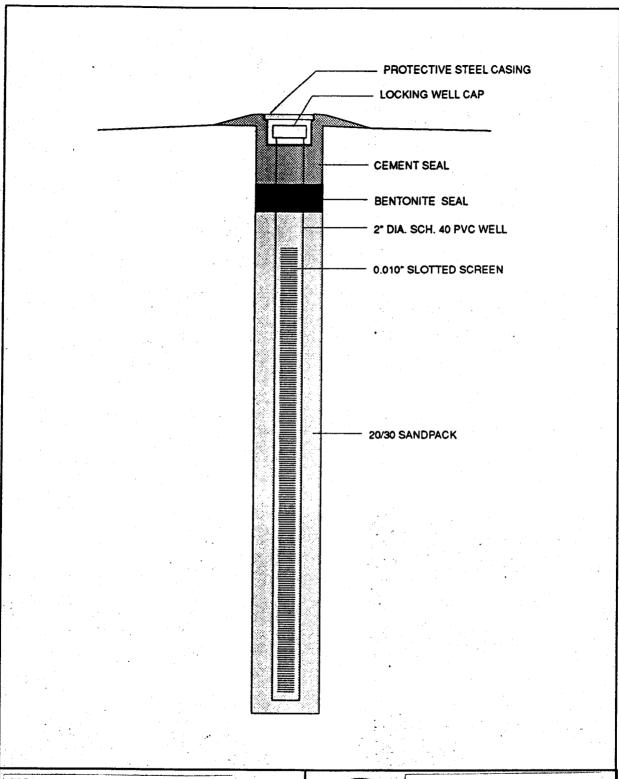


FIGURE C-1

MONITORING WELL CONSTRUCTION DIAGRAM



CONTAMINATION
ASSESSMENT REPORT
SITE 3221SW
NADEP PENSACOLA
PENSACOLA, FLORIDA

Groundwater Sampling

Groundwater samples were collected in accordance with ABB Environmental Services, Inc. (ABB-ES), FDER-approved Comprehensive Quality Assurance Plan (CompQAP). The monitoring wells were purged with a Teflon^{\mathbb{N}} bailer. Purging continued until five well volumes had been removed from the well. Groundwater samples were collected using an extruded Teflon^{\mathbb{N}} bailer. The samples were placed into appropriate containers, properly preserved, and placed on ice. Samples were then shipped to Wadsworth/ALERT Laboratories, Inc., in Tampa, Florida. All groundwater samples collected were analyzed for constituents of the waste oil analytical group as outlined in FDER Chapter 17-770, FAC.

Slug Test Procedures

The slug test developed by Bouwer and Rice (1976) measures the saturated hydraulic conductivity (K) using a single well. The test method used is termed a "rising head" test and is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of the rising water level in the well. Bouwer (1989) recommends the rising head slug test for wells with screened intervals that are only partially submerged or partially penetrate unconfined aquifers.

The slug was constructed of 1-inch outside diameter PVC pipe, 5 feet in length, filled with sand, and capped watertight at both ends. The water level changes in the monitoring wells were recorded using a data logger and pressure transducer. The pressure transducer was suspended less than 1 foot above the bottom of the well and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well to a depth below the original water table. Water levels were then observed until they stabilized at the original level. Generally, recovery occurred within 3 to 4 seconds. Following stabilization, the slug was quickly removed and water level measurements were recorded over time until the water level returned to the original level. Three rising head tests were conducted for each well in order to obtain an average recovery response.

APPENDIX D AQUIFER PARAMETER CALCULATIONS

Aquifer Parameter Calculations

Hydraulic gradient

Water table elevations were plotted on a map of the site. A water table contour map was drawn with flow lines (depicting groundwater flow direction) perpendicular to the groundwater elevation contours. The average groundwater hydraulic gradient was calculated by subtracting the differences in groundwater elevation (in feet) between two points on the map and dividing the elevation difference by the distance between the two points to obtain a resulting gradient in feet per foot. Water elevation data collected on May 20 and August 29, 1992, were used to calculate hydraulic gradients at the site. For each date, three traverses were made perpendicular to equipotential contour lines to calculate an average site hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = \frac{(h_1 - h_2)}{d} \tag{1}$$

where

i = hydraulic gradient (feet per foot [ft/ft]),

 h_1 = water table elevation, upgradient (feet),

 h_2 = water table elevation, downgradient (feet), and

d = horizontal distance (feet) between h_1 and h_2 along a flow line.

Hydraulic gradients calculated in this manner varied from 4.4×10^{-3} ft/ft to 7.4×10^{-3} ft/ft. The average hydraulic gradient at the site was calculated to be 5.6×10^{-3} ft/ft.

Hydraulic conductivity

Hydraulic conductivity from slug test data was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information is needed to assess the hydraulic conductivity:

- radius of well casing (r_c),
- $r_w = radius$ of borehole (r_c plus radius of the sand pack surrounding the well screen),
- length of screened interval below the water table (L_e),
- effective well radius (r_e),
- depth of well below the water table (L_w) ,
- depth to confining unit or bottom of aquifer below the static water table (H), and

• plot of time versus the logarithm of y, where y is the difference between the static water level outside the well and the water level inside the well.

Figure D-1 is a well diagram depicting most of the aquifer and well parameters. Calculations were made assuming that $L_{\rm w} <$ H. Hydraulic conductivity, K, was calculated as follows:

$$K = [R_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] \left[\frac{1}{t} \ln(\frac{y_o}{y_c}) \right]$$
 (2)

where

 $y_0 = y$ at time zero, and $y_t = y$ at time t.

The effective well radius, r_e , and the term $[(1/t)\ln(y_0/y_t)]$ were derived by using the computer program AQTESOLV^M (Geraghty & Miller, Inc., 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Slug test graphs are attached at the end of this appendix. Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the "best-fit" line is used to calculate the hydraulic conductivity, K.

Three slug tests each were performed inside well PEN-3221SW-MWl. Hydraulic conductivity, K, is reported in feet per minute (ft/min) on the slug test graphs, and was recalculated to feet per day (ft/day). K was found to vary from 4.9×10^1 ft/day to 7.1×10^1 ft/day with an average K of 5.7×10^1 ft/day.

Average pore water velocity

Estimates of average pore water velocity were obtained using the following formula:

$$V = \frac{(K*i)}{n} \tag{3}$$

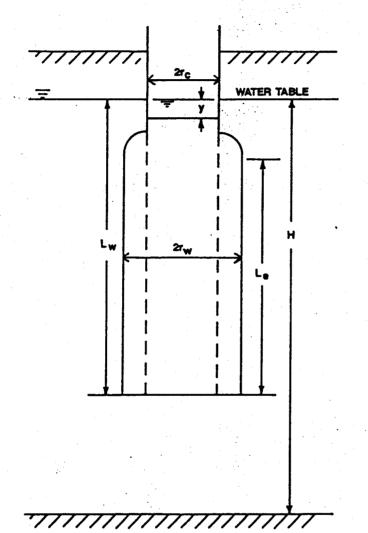
where

V = seepage velocity in ft/day,

K = hydraulic conductivity in ft/day,

i = hydraulic gradient, and

n = estimated porosity.



- r radius of well.
- r radius of well + total W thickness of the sand/gravel pack.
- L length of screened interval below the water table.
- L depth of well below water table.
- H -depth to confining unit below the water table.
- y -difference between static water level outside well and water level inside well.

FIGURE D-1

DEFINITIONS OF SLUG TEST PARAMETERS (from Bouwer, 1989)



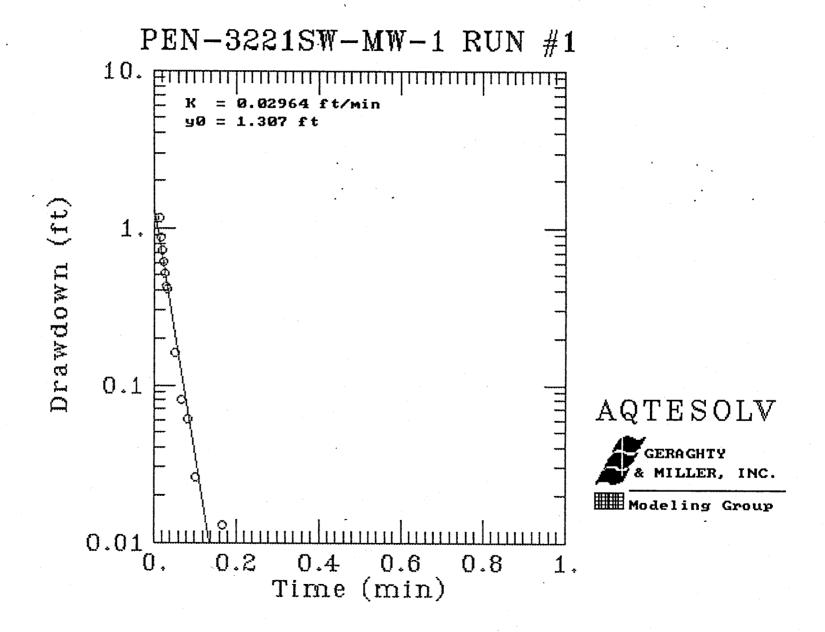
CONTAMINATION
ASSESSMENT REPORT
SITE 3221SW
NADEP PENSACOLA
PENSACOLA, FLORIDA

Porosities of unconsolidated sands range from 25 to 50 percent (Freeze and Cherry, 1979). Using an estimated porosity (n) of 30 percent, an average hydraulic gradient of 5.6×10^{-3} , and an average hydraulic conductivity of 5.7×10^{1} ft/day, the average pore water velocity is calculated as follows:

 $V = \frac{5.7 \times 10^{1} \ ft/day \times 6.6 \times 10^{-3} \ ft/ft}{0.30}$

V = 1.2 ft/day

SLUG TEST PLOTS



AQTESOLV RESULTS Version 1.10

Version 1.10

14:29:03

TEST DESCRIPTION

Data set..... A:3221SW11.SET

Data set title.... PEN-3221SW-MW-1 RUN #1

Knowns and Constants:

08/05/92

A, B, C..... 0.000, 0.000, 1.967

ANAL VILLA I VILLA DE LA CONTRE LA C

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate

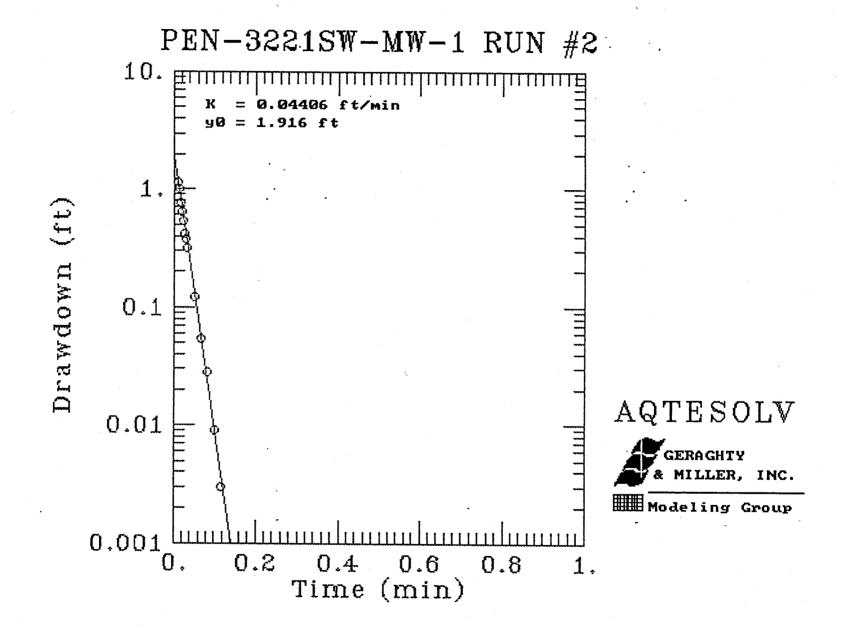
K = 2.9639E-002

y0 = 1.1722E + 000

TYPE CURVE DATA

K = 2.96393E-002y0 = 1.30739E+000

Time Drawdown Time Drawdown Time Drawdown
0.000E+000 1.307E+000 1.000E+000 2.310E-016



AQTESOLV RESULTS Version 1.10

08/05/92

14:37:19

TEST DESCRIPTION

Data set..... A:3221SW12.SET

Data set title.... PEN-3221SW-MW-1 RUN #2

Knowns and Constants:

A, B, C..... 0.000, 0.000, 1.967

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate

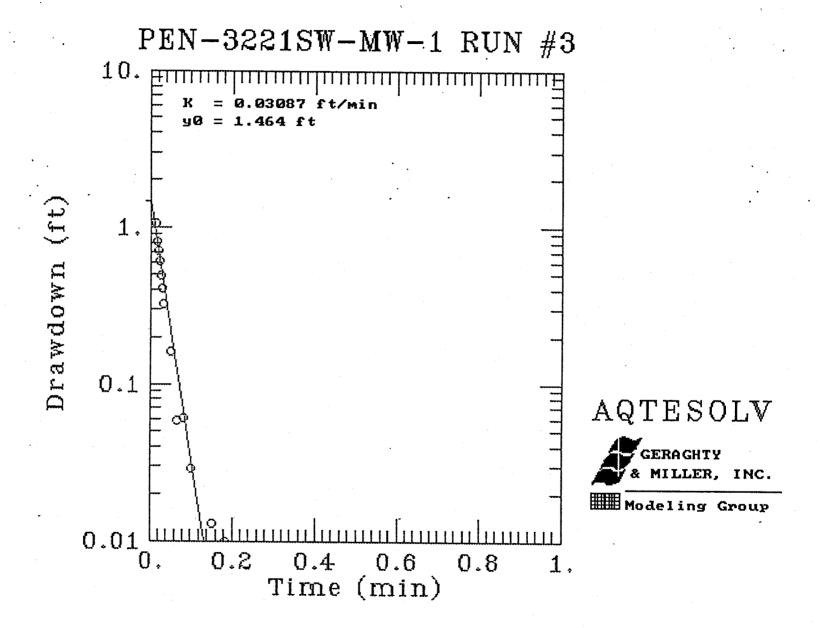
K = 4.4058E-002

y0 = 1.1722E + 000

TYPE CURVE DATA

K = 4.40581E-002y0 = 1.91602E+000

Time Drawdown Time Drawdown Time Drawdown
0.000E+000 1.916E+000 1.000E+000 7.348E-024



AQTESOLV RESULTS Version 1.10

08/05/92

14:55:25

TEST DESCRIPTION

Data set..... A:3221SW13.SET

Data set title.... PEN-3221SW-MW-1 RUN #3

Knowns and Constants:

A, B, C..... 0.000, 0.000, 1.967

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate

K = 2.3552E-002y0 = 1.1722E+000

TYPE CURVE DATA

K = 3.08743E-002y0 = 1.46428E+000

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	1.464E+000	1.000E+000	5.707E-017		

APPENDIX E LABORATORY ANALYTICAL DATA

SOIL SAMPLE ANALYSES

January through December 1992



WADSWORTH/ALERT

LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

February 12, 1992

Mr. Roger Durham
ABB Environmental Services, Inc.
2571 Executive Center Circle East
Suite 100
Tallahassee, FL 32301

Dear Mr. Durham:

Over the course of the past month, it was noted that toluene has begun randomly appearing in samples, trip blanks and equipment blanks at levels ranging from about 2 ug/L to about 22 ug/L. We have investigated its presence and feel that we have located the source of this random contamination problem.

WAL began using custom printed sample container labels this past fall. At that time we evaluated the labels for any trace contaminants and found none. In late December we received a second shipment of identical labels and began using them for sampling kits sent out after 20 December 1991. The investigation of the toluene contamination led us to evaluate this second shipment of labels as well. Upon evaluation, it was found that these labels are contaminated with Toluene as well as 2-Butanone (MEK). Given that these are volatile compounds it can be demonstrated that, under certain conditions, these compounds might migrate across the septum of the sample vial.

We have discontinued use of these labels and are attempting to reissue new labels and bottles for any sample kits which are still pending. In addition we are working with the printer to determine why these labels were not made to our previously determined specifications. We have also established a policy of testing all label batches before they may be used in any kits.

The impact which these findings have on any recent or current analytical data must be determined on an individual basis. If you have any questions regarding this matter or would like to further investigate particular results, please contact your project manager or myself at (813) 621-0784. Thank you for your patience and help in this matter.

Sincerely,

Wadsworth/ALERT Laboratories

N. Myron Gunsalus, Jr.

Quality Control Coordinator





LAB #: 2A0901-1 MATRIX : SOIL

SAMPLE ID: PEN-3221SW-SB1 (5-7) T.O. #0014

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	1/13- 1/17/92	ND	0.5 r	mg/kg
Cadmium	1/13- 1/14/92	ND	0.5	mg/kg
Chromium	1/13- 1/14/92	, ND		mg/kg
Lead	1/13- 1/14/92	ND	2.5 m	mg/kg



LAB #: 2A0901-2 MATRIX : SOIL

SAMPLE ID: PEN-3221SW-SB2-5 T.O. #0014

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	l
Arsenic	1/13- 1/17/92	ND	0.5	mg/kg
Cadmium	1/13- 1/14/92	ND	0.5	mg/kg
Chromium	1/13- 1/14/92	_ ND	2.5	mg/kg
Lead	1/13- 1/14/92	ND	2.5	mg/kg



LAB #: 2A0901-3 MATRIX : SOIL

SAMPLE ID: PEN-3221SW-SB3-5

T.O. #0014

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	1/13- 1/17/92	ND	0.5 m	ng/kg
Cadmium	1/13- 1/14/92	ND	0.5 m	ng/kg
Chromium	1/13- 1/14/92	ND	2.5 m	ng/kg
Lead	1/13- 1/14/92	ND	2.5 m	ng/kg



LAB #: 2A0901-4 MATRIX : SOIL

SAMPLE ID: PEN-3221SW-SB4 (5-7) T.O. #0014

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	I
Arsenic	1/13- 1/17/92	ND	0.5	mg/kg
Cadmium	1/13- 1/14/92	ND	0.5	mg/kg
Chromium	1/13- 1/14/92	ND	2.5	mg/kg
Lead	1/13- 1/14/92	ND	2.5	mg/kg



LAB #: 2D1102-6 MATRIX : SOIL

SAMPLE ID: 3221SW-MW3 (6') NADEP PENSACOLA

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	4/23/92 4/23- 4/24/92 4/23- 4/24/92	ND ND ND	0.5 mg/kg 0.5 mg/kg 2.5 mg/kg
Lead	4/23- 4/24/92	13	2.5 mg/kg



LAB #: 2D1102-7 MATRIX : SOIL

SAMPLE ID: 3221SW-MW4 (5') NADEP PENSACOLA

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/23/92	ND	0.5 mg/kg
Cadmium	4/23- 4/24/92	ND	0.5 mg/kg
Chromium	4/23- 4/24/92	ND	2.5 mg/kg
Lead	4/23- 4/24/92	ND	2.5 mg/kg



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 4/11/92

LAB #: 2D1102-8 MATRIX : SOIL

SAMPLE ID: 3221SW-MW5 (5-7') NADEP PENSACOLA

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/23/92	ND	0.5 mg/kg
Cadmium	4/23- 4/24/92	ND	0.5 mg/kg
Chromium	4/23- 4/24/92	ND	2.5 mg/kg
Lead	4/23- 4/24/92	ND	2.5 mg/kg

(None Detected) NOTE: ND



LAB #: 2H2914-1 MATRIX : SOIL

SAMPLE ID : SB9 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 95

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/ 8- 9/ 9/92 9/ 8/92 9/ 8/92	ND ND ND	0.5 mg/kg 0.5 mg/kg 2.5 mg/kg
Lead	9/ 8/92	ND	2.5 mg/kg



LAB #: 2H2914-2 MATRIX : SOIL

SAMPLE ID : SB10 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 94

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	1
Arsenic	9/ 8- 9/ 9/92	ND	0.5	mg/kg
Cadmium	9/8/92	ND	0.5	mg/kg
Chromium	9/ 8/92	ND	2.5	mg/kg
Lead	9/ 8/92	ND	2.5	mg/kg



WADSWORTH/ CLEAT Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 8/29/92

LAB #: 2H2914-3 MATRIX : SOIL

SAMPLE ID : SB11 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 90

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	ī
Arsenic Cadmium Chromium	9/ 8- 9/ 9/92 9/ 8/92 9/ 8/92	ND ND ND	0.5 0.5 2.5	mg/kg mg/kg mg/kg
Lead	9/ 8/92	ND	2.5	mg/kg



WADSWORTH/ LERT Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 8/29/92

LAB #: 2H2914-4 MATRIX : SOIL

SAMPLE ID : SB12 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis DRY WEIGHT (%): 95

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	9/ 8- 9/ 9/92	ND	0.5 mg/	′ka
Cadmium	9/ 8/92	ND	0.5 mg/	
Chromium	9/ 8/92	ND	2.5 mg/	
Lead	9/ 8/92	ND	2.5 mg/	'kg



COMPANY : ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 8/29/92

LAB #: 2H2914-5 MATRIX : SOIL

SAMPLE ID : SB13 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 94

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION RESULT LIMIT			
Arsenic Cadmium Chromium	9/ 8- 9/ 9/92 9/ 8/92 9/ 8/92	ND ND ND	0.5 mg/kg 0.5 mg/kg 2.5 mg/kg		
Lead	9/ 8/92	ND	2.5 mg/kg		



LAB #: 2H2914-6 MATRIX : WATER

SAMPLE ID : EQUIP BLANK PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic Cadmium	9/ 4- 9/ 8/92 9/ 4/92	ND ND	10 10	ug/L ug/L
Chromium	9/ 4/92	ND	50	ug/L
Lead	9/ 4/92	ND	5	ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 12/31/92

LAB #: 2L3105-3 MATRIX : SOIL

SAMPLE ID : 3221SW-SB14 (6.5')

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/ 5- 1/ 6/93	11	5 mg/kg	



LAB #: 2L3105-BK MATRIX : SOIL

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

DETECTION PREPARATION -**PARAMETER** ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 1/5-1/6/93 ND 5 mg/kg



LAB ID : LCS

MATRIX : SOIL

LABORATORY CONTROL SAMPLE RESULTS WET CHEMISTRY

PARAMETER		DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
TRPH (IR)	01/04/93		76	30 50-140	LCS

GROUNDWATER SAMPLE ANALYSES

January 25, 1992



ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015

NAS/NADEP PENSACOLA - PHASE II

Presented to:

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES. INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson

Project Manager

Randall C. Grubbs

Randall C. Grubbs/m

Laboratory Director - Florida

February 12, 1992





WADSWORTH/ALERT

LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

February 12, 1992

Mr. Roger Durham ABB Environmental Services, Inc. 2571 Executive Center Circle East Suite 100 Tallahassee. FL 32301

Dear Mr. Durham:

Over the course of the past month, it was noted that toluene has begun randomly appearing in samples, trip blanks and equipment blanks at levels ranging from about 2 ug/L to about 22 ug/L. We have investigated its presence and feel that we have located the source of this random contamination problem.

WAL began using custom printed sample container labels this past fall. At that time we evaluated the labels for any trace contaminants and found none. In late December we received a second shipment of identical labels and began using them for sampling kits sent out after 20 December 1991. The investigation of the toluene contamination led us to evaluate this second shipment of labels as well. Upon evaluation, it was found that these labels are contaminated with Toluene as well as 2-Butanone (MEK). Given that these are volatile compounds it can be demonstrated that, under certain conditions, these compounds might migrate across the septum of the sample vial.

We have discontinued use of these labels and are attempting to reissue new labels and bottles for any sample kits which are still pending. In addition we are working with the printer to determine why these labels were not made to our previously determined specifications. We have also established a policy of testing all label batches before they may be used in any kits.

The impact which these findings have on any recent or current analytical data must be determined on an individual basis. If you have any questions regarding this matter or would like to further investigate particular results, please contact your project manager or myself at (813) 621-0784. Thank you for your patience and help in this matter.

Sincerely,

Wadsworth/ALERT Laboratories

N. Myron Gunsalus, Jr.

Quality Control Coordinator





INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola - Phase II site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Roger Durham. The samples were accepted into Wadsworth's Florida facility on 28 January 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or noncompliant items have been noted below.

<u>Laboratory ID #</u> 2A2813-1,2,3,5,6,7

Narrative

The laboratory blank concurrently analyzed with these samples for volatile organic compounds contained methylene chloride. This compound is a common laboratory contaminant and its presence in the samples should be considered suspect.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER		METH)D	
	ORGANICS			
Volatile Organics		** EI	'A Method	624
Base/Neutral Acid Extractables		** EI	'A Method	625
	METALS			
Arsenic Cadmium Chromium Lead		** EP	A Method A Method A Method A Method	200.7 200.7
	MISCELLANEOUS			
Tot. Rec. Petroleum Hydrocarbons		** EP	A Method	418.1

NOTE: ** Indicates usage of this method to obtain results for this report. -Methods for Chemical Analysis of Water and Wastes, USEPA, EPA Methods 600/4-79-020, March, 1983. July, 1982 Drinking Waters USEPA, 600/4-88/039, December, 1988. -Standard Methods for the Examination of Water and Waste-Std. Methods water, APHA, 16th edition, 1985. USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984. SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986. ASTM Methods -American Society for Testing and Materials. -NIOSH Manual of Analytical Methods, National Institute for NIOSH Method Occupational Safety and Health, 2nd Edition, April 1977.



DATE RECEIVED:

1/28/92

LAB #: 2A2813-1 MATRIX: WATER

SAMPLE ID: MW 1

DATE EXTRACTED:
DATE ANALYZED:

NA 2/4/92

MAINIA. WAILIN

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	12	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS		
		WATER SOLID	LOW LEVEL	
1,2-Dichloroethane	106	(75-123) (85-126)	(85-138)	
Toluene-d8	102	(75-123) (89-124)	(89-128)	
Bromofluorobenzene	. 98	(86-115) (84-124)	(83-128)	



LAB #: 2A2813-1 MATRIX: WATER DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND ND
Acenaphthylene	ND	Di-n-butyl phthalate	
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
• • • •		Hexachlorobenzene	ND
4-Bromophenyl phenyl ether	ND	***	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	· ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether		Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
CHIYSCHE	עוו	11140110(2)0)0 04/23.000	

NOTE:	ND	(None Detected, lower detectabl	e limit = 10	ug/L) as rec'd
	ND*	(None Detected, lower detectabl	e limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitati	on limit: estimate	d value)

B (Compound detected in method blank associated with this sample)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-1 MATRIX: WATER

DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/ 6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE:	ND	(None Detected, low	ver detectable limit =	10 ug/L)	as rec'd
	ND*	(None Detected, low	ver detectable limit =	50 ug/L)	as rec'd
	T	(Datastad but bala		Louise between tee	

(Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS		
	•	WATER SOLID		
Nitrobenzene-d5	119	(22-135) (10-155)		
Fluorobiphenyl	38	(34-140) (12-153)		
Terphenyl-d14	56	(10-132) (13-140)		



LAB #: 2A2813-1 MATRIX: WATER DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

ND
ND
ND
ND
ND*
*dV
ND*
ND*
*dv
ND
ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	x	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	42	(17-95)	(24-118)
Phenol-d5	71	(11-89)	(17-124)
2,4,6-Tribromophenol	82	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 2A2813-1

DATE RECEIVED: 1/28/92

MATRIX : WATER

SAMPLE ID: MW 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION RESULT LIMIT		
A	2/4/92	ND	10	ug/L	
Arsenic	2/ 4/92	ND	1	ug/L	
Cadmium			50	ug/L	
Chromium	2/ 4/92	ND	30	ug/ L	
Lead	2/ 4- 2/ 5/92	ND	5	ug/L	

(None Detected) NOTE: ND



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-1

DATE RECEIVED: DATE EXTRACTED:

1/28/92 1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	Units	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2A2813-2

SAMPLE ID: PZ 1

MATRIX: WATER

.

NADEP PENSACOLA/ 3221 SW

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

DATE RECEIVED:

DATE ANALYZED:

1/28/92

DATE EXTRACTED:

NA 2/4/92

CERTIFICATION #: E84059 HRS84297

ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND	
ND	cis-1,3-Dichloropropene	ND	
ND ND	trans-1,3-Dichloropropene Ethylbenzene	ND ND	
ND ND			В
ND	Toluene	ND	
ND ND	1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND	
ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND	
ND ND ND	Xylene(Total)	ND	
	ND* ND	ND* 1,2-Dichloroethene(Total) ND 1,2-Dichloropropane ND cis-1,3-Dichloropropene ND trans-1,3-Dichloropropene ND Ethylbenzene ND Methylene chloride ND 1,1,2,2-Tetrachloroethane ND Toluene ND Toluene ND 1,1,1-Trichloroethane ND 1,1,2-Trichloroethane ND Trichloroethane ND Trichloroethane ND Trichlorofluoromethane ND Vinyl chloride ND Xylene(Total) ND Xylene(Total)	ND* 1,2-Dichloroethene(Total) ND ND 1,2-Dichloropropane ND ND cis-1,3-Dichloropropene ND ND trans-1,3-Dichloropropene ND ND Ethylbenzene ND ND Methylene chloride 13 ND 1,1,2,2-Tetrachloroethane ND ND Tetrachloroethene ND ND Toluene ND ND 1,1,1-Trichloroethane ND ND 1,1,2-Trichloroethane ND ND Trichloroethene ND ND Trichloroethene ND ND Trichloroethene ND ND Trichlorofluoromethane ND ND Vinyl chloride ND ND Xylene(Total) ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	109	(75-123) (85-126)	(85-138)
Toluene-d8	102	(75-123) (89-124)	(89-128)
Bromofluorobenzene	100	(86-115) (84-124)	(83-128)



LAB #: 2A2813-2 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

HRS84297

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

(1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
in our doctre	ND .	1,2-Dichiolobenzene	עוו
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
		T, I BINI DI O DO LUCIO	
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
			•••
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
The state of the s		nexuonioi obdituatione	112
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
CHI J DONG	עויו	Indeno(1,2,5-cu/byrelle	עוו

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

В (Compound detected in method blank associated with this sample)



DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

LAB #: 2A2813-2 MATRIX: WATER

DATE ANALYZED: 2/6/92

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	* *	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	90	(22-135) (10-155)
Fluorobiphenyl	36	(34-140) (12-153)
Terphenyl-d14	62	(10-132) (13-140)



LAB #: 2A2813-2 MATRIX: WATER DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/ 6/92

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ИD≭
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND*
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Pheno1	ND
2.4.6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	34	(17-95) (24-118)
Phenol-d5	53	(11-89) (17-124)
2.4.6-Tribromophenol	78	(10-134) (10-156)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-2 MATRIX : WATER

SAMPLE ID: PZ 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE RESULT		DETECTION LIMIT	
Arsenic	2/ 4/92	ND	10	ug/L
Cadmium	2/ 4/92	ND	10	ug/L
Chromium	2/ 4/92	ND	50	ug/L
Lead	2/ 4- 2/ 5/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB ID: 2A2813-2

DATE EXTRACTED: 1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: PZ 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059.

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED: 1/

1/28/92

LAB #: 2A2813-3

SAMPLE ID: PZ 2

DATE EXTRACTED:
DATE ANALYZED:

NA 2/4/92

MATRIX: WATER

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	15	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	15	
2-Chloroethylvinyl ether	ND	Toluene	16	
Chloroform	3	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	1	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			
1,4-Dichiologchane	עוז			

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NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
```

B (Compound detected in method blank associated with this sample)-- (Not Analyzed)

-- (NOC Analyzed

*	ACCEPTABL	E LIMITS	
	WATER	SOLID	LOW LEVEL
114	(75-123)	(85-126)	(85-138)
101	(75-123)	(89-124)	(89-128)
99	(86-115)	(84-124)	(83-128)
	101	WATER 114 (75-123) 101 (75-123)	114 (75-123) (85-126) 101 (75-123) (89-124)



LAB #: 2A2813-3

DATE RECEIVED: DATE EXTRACTED: 1/31/92 DATE ANALYZED:

1/28/92 2/ 6/92

MATRIX: WATER

SAMPLE ID: PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 8270 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND
Bis(2-Chloroethyl)ether	ND		ND
Bis(2-Chloroisopropyl)ether	ND		ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

ug/L) as rec'd (None Detected, lower detectable limit = 10 NOTE: ND ug/L) as rec'd (None Detected, lower detectable limit = 50 ND*

(Detected, but below quantitation limit; estimated value) J

(Compound detected in method blank associated with this sample)



DATE RECEIVED: DATE EXTRACTED: 1/31/92

1/28/92

LAB #: 2A2813-3 MATRIX: WATER

DATE ANALYZED:

2/6/92

SAMPLE 1D: PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

(2 of 2)USEPA METHOD 8270 - GC/MS

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	D	(Company detected in method blank accounted with this comple)

(Compound detected in method blank associated with this

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	91	(22-135) (10-155)
Fluorobiphenyl	19	(34-140) (12-153)
Terphenyl-d14	58	(10-132) (13-140)



LAB #: 2A2813-3 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

DATE ANALYZED: 2/ 6/92

HRS84297

SAMPLE ID: PZ 2 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

ND
ND
ND
ND
ND*
ND
ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	37	(17-95) (24-118)
Phenol-d5	74 .	(11-89) (17-124)
2,4,6-Tribromophenol	38	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, 1NC. LAB #: 2A2813-3

DATE RECEIVED: 1/28/92

MATRIX : WATER

SAMPLE ID : PZ 2 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	2/ 4/92	ND	10	ug/L
Cadmium	2/ 4/92	ND	10	ug/L
Chromium	2/ 4/92	ND	50	ug/L
Lead	2/ 4- 2/ 5/92	ND	5	ug/L

(None Detected) NOTE: ND



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-3

MATRIX : WATER

SAMPLE ID: PZ 2

NADEP PENSACOLA/ 3221 SW

DATE ANALYZED:

DATE RECEIVED: DATE EXTRACTED:

1/30/92

1/28/92 1/30/92

CERTIFICATION #: E84059 HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

LOWER DETECTION UNITS LIMIT RESULT 1 ND mg/L Total Recoverable Petroleum Hydrocarbons

NOTE: ND (None Detected)



LAB #: 2A2813-4
MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: NA
DATE ANALYZED: 2/5/92

HRS84297

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ИD	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	79B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	9
2-Chloroethylvinyl ether	ND	Toluene	16
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
- (
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1.2-Dichloroethane	ИD		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	%	ACCEPTABLE LIM	i TS
		WATER SOLI	D LOW LEVEL
1,2-Dichloroethane	107	(75-123) (85-1	126) (85-138)
Toluene-d8	102	(75-123) (89-1	(89-128)
Bromofluorobenzene	98	(86-115) (84-1	(24) (83-128)



LAB #: 2A2813-4 MATRIX: WATER DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/ 6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
	ND ND	1,4-Dichlorobenzene	ND
Benzo(a)anthracene		3,3'-Dichlorobenzidine	ND*
Benzo(b)fluoranthene	ND	3,3 -Dichtoropenziame	ND.
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Benzo(a)pyrene	MD	a, i bilitoro de l'acciona	
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether		Fluoranthene	ND
Bis(2 onlordispropy 1)	V		
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
Bucyl benzyl phenarace			
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
Our Agene	*****		

NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated	value)
	В	(Compound detected in method blank associated with	this sample)
		(A) - 4 - A 1	



DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

LAB #: 2A2813-4 MATRIX: WATER

DATE ANALYZED: 2/6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

ND

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone ND ND Naphthalene Nitrobenzene ND ND N-Nitrosodimethylamine N-Nitrosodiphenylamine ND N-Nitrosodi-n-propylamine ND ND Phenanthrene Pyrene ND

1,2,4-Trichlorobenzene

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	* *	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	130	(22-135) (10-155)
Fluorobiphenyl	36	(34-140) (12-153)
Terphenyl-d14	56	(10-132) (13-140)



LAB #: 2A2813-4 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED:

2/ 6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

No. of the control of	
4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	kQN
2-Nitrophenol	ND
4-Nitrophenol	kQN
Pentachlorophenol	kQN
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	· %	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	40	(17-95) (24-118)
Phenol-d5	34	(11-89) (17-124)
2.4.6-Tribromophenol	41	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 1/28/92

LAB #: 2A2813-4 MATRIX : WATER

SAMPLE ID: PZ 3 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	2/4/92	ND	10 ug/L
Cadmium	2/ 4/92	ND	10 ug/L
Chromium	2/ 4/92	ND	50 ug/L
Lead	2/ 4- 2/ 5/92	ND	5 ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB ID: 2A2813-4

DATE EXTRACTED: 1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: PZ 3 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-5 MATRIX: WATER

SAMPLE ID: DUPLICATE

DATE EXTRACTED:
DATE ANALYZED:

NA 2/ 5/92

MAIRIA. WAIDN

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	18	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND	-,		
1,2-Dichloroethane	ND			
_,				

NOTE:	ND**	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
	J	(Detected, but below quantitation limit, catimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS		
		WATER SOLID	LOW LEVEL	
1,2-Dichloroethane	112	(75-123) (85-126)	(85-138)	
Toluene-d8	101	(75-123) (89-124)	(89-128)	
Bromofluorobenzene	97	(86-115) (84-124)	(83-128)	



LAB #: 2A2813-5

MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 1/31/92

1/28/92

DATE ANALYZED:

2/ 6/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

(1 of 2)USEPA METHOD 625 - GC/MS

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
- ·	ND	1,2-Dichlorobenzene	ND
Anthracene	עא	1,2-Dichiorobenzene	ייי
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroethyl)ether		· -	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	NĐ	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
- · · · · ·	ND	Hexachlorobutadiene	ND
Butyl benzyl phthalate	ND	nexaction obditations	
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
om yacne	MD	11140110(1,1,0 04/1)10110	

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	R	(Compound detected in method blank associated with this sample)



LAB #: 2A2813-5

MATRIX: WATER

DATE RECEIVED: 1/28/92

DATE EXTRACTED: 1/31/92 DATE ANALYZED:

2/ 6/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

ND
ND

NOTE:	ND*	(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 (Detected, but below quantitation limit: estimated (Compound detected in method blank associated with	<pre>ug/L) as rec'd ug/L) as rec'd value) this sample)</pre>
	D	(Compound detected in method brain abbottage	•
		(Not Analyzed)	

SURROGATE RECOVERY:	. %	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	88	(22-135)	(10-155)
Fluorobiphenyl	13	(34-140)	(12-153)
Terphenyl-d14	56	(10-132)	(13-140)



LAB #: 2A2813-5 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/ 6/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

ACID EXTRACTABLE ORGANICS USEPA METHOD 8270 - GC/MS CERTIFICATION #: E84059

HRS84297

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	מא

NOTE:			ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value	ue)
	В	(Compound detected in method blank associated with this	

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	47	(17-95) (24-118)
Phenol-d5	58	(11-89) $(17-124)$
2,4,6-Tribromophenol	59	(10-134) (10-156)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-5 MATRIX : WATER

SAMPLE ID : DUPLICATE NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

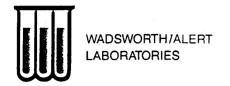
METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	2/ 4/92	ND	10 u	ıg/L
Cadmium	2/4/92	ND		ig/L
Chromium	2/ 4/92	ND		ıg/L
Lead	2/ 4- 2/ 5/92	ND	5 ບ	ıg/L

NOTE: ND (None Detected)



DATE RECEIVED: DATE EXTRACTED: 1/28/92 1/30/92

LAB ID: 2A2813-5 MATRIX: WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-6 MATRIX: WATER

DATE EXTRACTED:
DATE ANALYZED:

NA 2/ 5/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

HRS84297

Acr	olein	ND*	1,1-Dichloroethene	ND	
Acr	ylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
	zene	ND	1,2-Dichloropropane	ND	
2011		ND	1,2-bichiolopropane	ND	
Bro	nodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bro	noform	ND	trans-1,3-Dichloropropene	ND	
Bro	nomethane	ND	Ethylbenzene	ND	
			2011, 1201120110		
Carl	oon tetrachloride	ND	Methylene chloride	13	В
Chlo	probenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chlo	proethane	ND	Tetrachloroethene	ND	
2-Cl	nloroethylvinyl ether	ND	Toluene	ND	
Chlo	proform	ND	1,1,1-Trichloroethane	ND	
Chlo	romethane	ND	1,1,2-Trichloroethane	ND	
			.,.,.	-	
Dibr	comochloromethane	ND	Trichloroethene	ND	
1,2-	Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-	Dichlorobenzene	ND	Vinyl chloride	ND	
			•		
1,4-	Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-	Dichloroethane	ND			
	Dichloroethane	ND			
•					

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	* %	ACCEPTABLE LIM	ITS
		WATER SOL	ID LOW LEVEL
1,2-Dichloroethane	108	(75-123) (85-	126) (85-138)
Toluene-d8	103	(75-123) (89-	124) (89-128)
Bromofluorobenzene	98	(86-115) (84-	, ,



LAB #: 2A2813-6 MATRIX: WATER

DATE RECEIVED: 1/28/92

DATE EXTRACTED: DATE ANALYZED:

NA 2/ 5/92

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS OTHER COMPOUNDS

HRS84297

Acetone

13 ug/L

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations



LAB #: 2A2813-6 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1.2.3-cd)pyrene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated	value)
	В	(Compound detected in method blank associated with	this sample)



LAB #: 2A2813-6 MATRIX: WATER

DATE RECEIVED:

1/28/92

DATE EXTRACTED: 1/31/92 DATE ANALYZED:

2/ 6/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	. ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50
(Detected but heles ND* ug/L) as rec'd J

(Detected, but below quantitation limit: estimated value)

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
Nitrobenzene-d5 Fluorobiphenyl Terphenyl-d14	104 19 61	WATER SOLID (22-135) (10-155) (34-140) (12-153) (10-132) (13-140)



LAB #: 2A2813-6 MATRIX: WATER

DATE RECEIVED: 1/28/92

DATE EXTRACTED: 1/31/92

DATE ANALYZED:

2/ 6/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd	
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd	
	J	(Detected, but below quantitation limit; estimated value)	
	D.	(Compound detected in method blank accordated with this sample)	

SURROGATE RECOVERY:	**	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	48	(17-95)	(24-118)
Phenol-d5	71	(11-89)	(17-124)
2,4,6-Tribromophenol	89	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 1/28/92

LAB #: 2A2813-6 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION RESULT LIMIT			
Arsenic	2/ 4/92	ND	10	ug/L	
Cadmium	2/ 4/92	ND	10	ug/L	
Chromium	2/ 4/92	ND	50	ug/L	
Lead	2/ 4- 2/ 5/92	ND	5	ug/L	

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB ID: 2A2813-6

DATE EXTRACTED:

1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

LOWER DETECTION RESULT UNITS LIMIT Total Recoverable Petroleum Hydrocarbons ND mg/L 1

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92 NA

HRS84297

LAB #: 2A2813-7 MATRIX: WATER

DATE EXTRACTED: DATE ANALYZED:

2/ 5/92

SAMPLE ID: TRIP BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

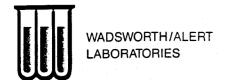
VOLATILE ORGANICS

USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
Benzene	ND.	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	14	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	3	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	2	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND		-	
1,2-Dichloroethane	ND			

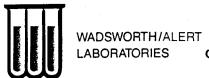
```
NOTE:
            (None Detected, lower detectable limit = 1
                                                                    ug/L) as rec'd
      ND* (None Detected, lower detectable limit = 10
                                                                    ug/L) as rec'd
      ND** (None Detected, lower detectable limit =
                                                                    ug/L) as rec'd
            (Detected, but below quantitation limit; estimated value)
       J
       В
            (Compound detected in method blank associated with this sample)
```

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS	
		WATER SOLID LOW LEVEL	
1,2-Dichloroethane	114	(75-123) (85-126) (85-138)	
Toluene-d8	102	(75-123) (89-124) (89-128)	
Bromofluorobenzene	96	(86-115) (84-124) (83-128)	



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles
Methylene chloride
Toluene
2-Butanone
Acetone

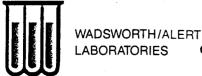
Semi-volatiles
Dimethyl phthalate
Diethly phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

Metals Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	•	MSD REC	RPD	QC RPD	LIMITS RECOVERY
4,4'-DDT	0	95		112	16	22	66-119
Benzene	10	. 86		93	8	20	39-150
(cmpd. name)	sample result	lst% recov.	2nd% recov.	Rel.% diff.	accep. method perform range		

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



LAB #: 2A2813-BK

MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 1/28/92

DATE ANALYZED:

NA 2/ 4/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		.,,
1,2-Dichloroethane	ND		

```
NOTE:
              (None Detected, lower detectable limit = 1
        ND
                                                                                  ug/L) as rec'd
        ND* (None Detected, lower detectable limit = 10 ND** (None Detected, lower detectable limit =
                                                                                  ug/L) as rec'd
                                                                                  ug/L) as rec'd
        J
              (Detected, but below quantitation limit; estimated value)
```

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID LOW LEVEL
1,2-Dichloroethane	108	(75-123) (85-126) (85-138)
Toluene-d8	99	(75-123) (89-124) (89-128)
Bromofluorobenzene	96	(86-115) (84-124) (83-128)



LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: NA
DATE ANALYZED: 2/4/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND*		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	101	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	99	(86-115)		



LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: NA
DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
ND	cis-1,3-Dichloropropene	ND
ND ND	trans-1,3-Dichloropropene Ethylbenzene	ND ND
ND	Methylene chloride	1
ND		ND
ND	Tetrachloroethene	ND
ND	Toluene	ND
		ND
ND	1,1,2-Trichloroethane	ND
ND	Trichloroethene	ND
		ND
ND	Vinyl chloride	ND
ND	Xvlene(Total)	ND
ND		
	ND* ND	ND* 1,2-Dichloroethene(Total) ND 1,2-Dichloropropane ND cis-1,3-Dichloropropene ND trans-1,3-Dichloropropene ND Ethylbenzene ND Methylene chloride ND 1,1,2,2-Tetrachloroethane ND Tetrachloroethene ND Toluene ND 1,1,1-Trichloroethane ND 1,1,2-Trichloroethane ND Trichloroethene ND Trichloroethene ND Trichlorofluoromethane ND Vinyl chloride ND Xylene(Total) ND

	ND* ND** J B	(None Detected, lower detectable limit = 1 (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = (Detected, but below quantitation limit; estimated (Compound detected in method blank associated with (Not Analyzed)	ug/L) as rec'd ug/L) as rec'd ug/L) as rec'd value) this sample)
--	--------------	---	--

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	103	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	96	(86-115) (84-124)	(83-128)



LAB #: 2A2813-BK MATRIX: WATER DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

Acenaphthene ND Dibenzo(a,h)anthracene ND Acenaphthylene ND Di-n-butyl phthalate ND Anthracene ND 1,2-Dichlorobenzene ND Benzidine ND* 1,3-Dichlorobenzene ND Benzo(a)anthracene ND 1,4-Dichlorobenzene ND Benzo(b)fluoranthene ND 3,3'-Dichlorobenzidine ND* Benzo(k)fluoranthene ND Diethyl phthalate ND Benzo(ghi)perylene ND Dimethyl phthalate ND Benzo(a)pyrene ND 2,4-Dinitrotoluene ND Bis(2-Chloroethoxy)methane ND 2,6-Dinitrotoluene ND Bis(2-Chloroethyl)ether ND Di-n-octyl phthalate ND Bis(2-Chloroisopropyl)ether ND Fluoranthene ND Bis(2-Ethylhexyl)phthalate ND Fluorene ND 4-Bromophenyl phenyl ether ND Hexachlorobenzene ND Butyl benzyl phthalate ND Hexachlorobutadiene ND 2-Chloronaphthalene ND Hexachlorocyclopentadiene ND 4-Chlorophenyl phenyl ether ND Hexachloroethane ND Chrysene ND Indeno(1,2,3-cd)pyrene ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	NT)

NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as rec'd
		(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated	value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	41	(22-135) (10-155)
Fluorobiphenyl	84	(34-140) $(12-153)$
Terphenyl-d14	83	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED: 1/28/92 1/31/92 2/ 5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND:
2-Methyl-4,6-dinitrophenol	ND
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	מא

NOTE:	ND* J B	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	19	(17-95) (24-118)
Phenol-d5	14	(11-89) (17-124)
2,4,6-Tribromophenol	15	(10-134) (10-156)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-BK MATRIX : WATER

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	2/4/92	ND	10 ug/i	L
Cadmium	2/4/92	ND	10 ug/1	
Chromium	2/4/92	ND	50 ug/	
Lead	2/ 4/92	ND	5 ug/i	L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-BK

DATE RECEIVED: DATE EXTRACTED:

1/28/92 1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

LOWER DETECTION RESULT UNITS LIMIT Total Recoverable Petroleum Hydrocarbons ND mg/L 1

NOTE: ND (None Detected)



LAB #: 2A2813-LCS MATRIX: WATER

METHOD: 624

DATE RECEIVED:

01/28/92

DATE EXTRACTED: NA

DATE ANALYZED: 02/04/92

LABORATORY CHECK SAMPLE

COMPOUND	LCS %REC	QC LIMITS **XRECOVERY	
1,1-Dichloroethene	68	56-133	
Trichloroethene	96	67-106	
Chlorobenzene	96	78-122	
Toluene	97	64-128	
Benzene	88	83-123	
Dichlorobromomethane	87	71-123	



LAB #: 2A2813-LCS

MATRIX: WATER METHOD: 624

DATE RECEIVED:

01/28/92

DATE EXTRACTED: NA

DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE

COMPOUND	LCS %REC	QC LIMITS %RECOVERY	
1 1 Na-11			
1,1-Dichloroethene	101	56-133	
Trichloroethene	95	67-106	
Chlorobenzene	99	78-122	
Toluene	94	64-128	
Benzene	- 88	83-123	
Dichlorobromomethane	82	71-123	



LAB #: 2A2813 MATRIX: WATER 2A2813-LCS

METHOD: 625

DATE RECEIVED: 01/28/92 **DATE EXTRACTED:** 01/31/92 DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE RECOVERY

LCS %REC	QC LIMITS RECOVERY	
69	20-111	
96	31-105	
64	22-107	
107	12-108	
106	42-125	
82	31-99	
	69 96 64 107 106	RECOVERY 69 20-111 96 31-105 64 22-107 107 12-108 106 42-125



2A2813-LCS

LAB #: 2A2813 MATRIX: WATER

METHOD: 625

DATE RECEIVED: 01/28/92 **DATE EXTRACTED:** 01/31/92 DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY	
Pentachlorophenol	14	10-100	
Phenol	57	12-90	
2-Chlorophenol	64	30-100	
4-Chloro-o-cresol	15	12-109	
4-Nitrophenol	36	10-102	



LAB #: 2A2813-LCS

MATRIX: WATER

DATE RECEIVED:

DATE PREP'D:

01/28/92 02/04/92 02/04/92

DATE ANALYZED:

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY	
Arsenic, furnace	80	54-130	
Cadmium	104	78-113	
Chromium	106	79-121	4
Lead, furnace	92	64-131	



LAB #:

2A2813-LCS

MATRIX: WATER

DATE RECEIVED:

DATE EXTRACTED:

01/28/92 01/30/92 01/30/92

DATE ANALYZED:

LABORATORY CHECK SAMPLE

COMPOUND

LCS %REC QC LIMITS

RECOVERY

Tot. Rec. Petroleum Hydrocarbons

104

75-124



LAB#:

2A2813-1

MATRIX:

WATER

METHOD:

624

DATE RECEIVED:

01/28/92

DATE EXTRACTED:

NA

DATE ANALYZED:

02/05/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
1,1-Dichloroethene	76	88	15	19	63-123
Trichloroethene	91	91	0	10	75-115
Chlorobenzene	91	92	1	13	74-113
Toluene	120	127	6	23	75-122
Benzene	83	88	6	16	76-126
Dichlorobromomethane	82	86	5	15	67-114



LAB #:

2A2813-1,2

MATRIX:

WATER

DATE RECEIVED: 01/28/92 **DATE EXTRACTED:** 02/04/92

DATE ANALYZED: 02/04/92 to

02/05/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY INORGANIC PARAMETERS - METALS

ELEMENT	MS	MSD	RPD	QC	LIMITS
	%REC	%REC		RPD	RECOVERY
Arsenic, furnace	86	90	4	19	80-119
Cadmium	102	103	1	15	76-110
Chromium	105	105	0	21	74-117
Lead. furnace	101	100	1	24	76-124

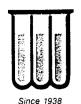
WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Clie	nt: ABB Project Name/Number: NA	+0EP-	Pensacol
Samp	les Received By: Carol McMulty_Date Received:	1/28/	92
Samp	(Signature) le Evaluation Form By: Mc Multy LAB No: (Signature)		
Туре	of shipping container samples received in? WAL Cooler		_
	Client Cooler WAL Shipper Box Other		
Any	"NO" responses or discrepancies should be explained in comments	section	ı.
		YES	NO
1.	Were custody seals on shipping container(s) intact?	. 🗶	·
2.	Were custody papers properly included with samples?	. <u>×</u>	
3.	Were custody papers properly filled out (ink, signed, match labels)?	. <u>X</u>	-
4.	Did all bottles arrive in good condition (unbroken)?	· _X	
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?	· <u>×</u>	
6.	Were correct bottles used for the tests indicated?	. <u>×</u>	
7.	Were proper sample preservation techniques indicated?	. <u>×</u>	-
8.	Were samples received within adequate holding time?	. <u>×</u>	<u></u>
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)	· ×_	
10.	Were samples in direct contact with wet ice?	· <u>×</u>	
11.	Were samples accepted into the laboratory?	. 7	
	Cooler # *C Cooler # Temp _		°C
	Cooler # *C Cooler # Temp _	·	° C
Comme	ents:	1 11.	
			

WADSWORTH/ALERT LABORATORIES - FLORIDA 5910-H BRECKENRIDGE PARKWAY/TAMPA, FL \$3610

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GROUNDWATER SAMPLE ANALYSES April 15, 1992



WADSWORTH/ALERT

LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015, MOD. NO. 0001

NAS/NADEP PENSACOLA

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson Project Manager

Randall C. Grubb's Laboratory Director Florida

May 4, 1992





INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 16 April 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or noncompliant items have been noted below.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER	METHOD
	ORGANICS
Volatile Organics	** EPA Method 624
Base Neutral/Acid Extractables	** EPA Method 625
	METALS
Arsenic Cadmium Chromium Lead	** EPA Method 206.2 ** EPA Method 200.7 ** EPA Method 200.7 ** EPA Method 239.2
MI	SCELLANEOUS
Tot. Rec. Petroleum Hydrocarbons	** EPA Method 418.1

NOTE: ** Indicates usage of this method to obtain results for this report.

EPA Methods -Methods for Chemical Analysis of Water and Wastes, USEPA,
600/4-79-020, March, 1983. July, 1982
Drinking Waters USEPA, 600/4-88/039, December, 1988.

Std. Methods -Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985.

USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984.

SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986.

ASTM Methods -American Society for Testing and Materials.

NIOSH Method -NIOSH Manual of Analytical Methods, National Institute for

Occupational Safety and Health, 2nd Edition, April 1977.



LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	**	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	84	(75-123) (85-126)	(85-138)
Toluene-d8	99	(75-123) (89-124)	(89-128)
Bromofluorobenzene	90	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND
Bis(2-Chloroethoxy)methane Bis(2-Chloroethyl)ether Bis(2-Chloroisopropyl)ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	ND.	(All the limits actions of value)
	J	(Detected, but below quantitation limit; estimated value)
	D	(Compound detected in method blank associated with this sample)
	В	(Compound detected in method blank associated with one)
		(Not Analyzed)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1.2.4-Trichlorobenzene	ND ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd
ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd
(Detected, but below quantitation limit: estimated value)
B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	55	(22-135) (10-155)
Fluorobiphenyl	65	(34-140) (12-153)
Terphenyl-d14	39	(10-132) (13-140)

WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 4/16/92 4/16/92

DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

EXTRACTABLE ORGANICS

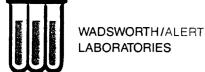
OTHER COMPOUNDS

HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

16 ug/L



LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY: X ACCEPTABLE LIMITS WATER SOLID 2-Fluorophenol 51 (17-95)(24-118)Phenol-d5 58 (11-89)(17-124)2,4,6-Tribromophenol 50 (10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-1 MATRIX : WATER

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2D1601-1

DATE RECEIVED:

4/16/92

MATRIX : WATER

DATE EXTRACTED: 4/30/92 DATE ANALYZED:

5/ 1/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-2 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW2 NADEP PEN

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND*	(None Detected, lower detectable limit = 1 ug/L) as rec'e (None Detected, lower detectable limit = 10 ug/L) as rec'e	
	ND**	(None Detected, lower detectable limit = ug/L) as rec'e	ď
	J	(Detected, but below quantitation limit; estimated value)	
	В	(Compound detected in method blank associated with this sample)	
		(Not Analyzed)	

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	92	(75-123) (85-126)	(85-138)
Toluene-d8	101	(75-123) $(89-124)$	(89-128)
Bromofluorobenzene	93	(86-115) (84-124)	(83-128)



LAB #: 2D1601-2 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW2 NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene			ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
zenzo(o) i i dei anomene		o,o bionioiossimiams	
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
beame (a) pyrene		z, i zimiorocozaono	
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
DID(2 carologopropy, 1, canol		1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
	-		. –

NOTE:	ND ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-2 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

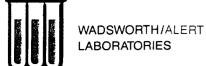
USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit: estimated value) (Compound detected in method blank associated with this sample) В

(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	45	(22-135) (10-155)
Fluorobiphenyl	41	(34-140) (12-153)
Terphenyl-d14	22	(10-132) (13-140)



LAB #: 2D1601-2 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: 4/16/92
DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS		
		WATER	SOLID	
2-Fluorophenol	30	(17-95)	(24-118)	
Phenol-d5	29	(11-89)	(17-124)	
2,4,6-Tribromophenol	24	(10-134)	(10-156)	



DATE RECEIVED: 4/16/92

LAB #: 2D1601-2 MATRIX : WATER

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-2 MATRIX: WATER

DATE EXTRACTED: 4/30/92 DATE ANALYZED:

5/ 1/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-3 MATRIX: WATER DATE RECEIVED:

4/16/92

DATE EXTRACTED:
DATE ANALYZED:

NA 4/20/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

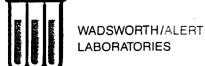
HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	8
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	1		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'	d
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'	ď
	ND**	(None Detected, lower detectable limit = ug/L) as rec'	d
	J	(Detected, but below quantitation limit; estimated value)	
	В	(Compound detected in method blank associated with this sample)	
		(Not Analyzed)	

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	95	(86-115) (84-124)	(83-128)



LAB #: 2D1601-3
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3 NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

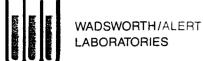
USEPA METHOD 625 - GC/MS (1 of 2)

ND	Dibenzo(a,h)anthracene	ND
ND	Di-n-butyl phthalate	ND
ND	1,2-Dichlorobenzene	ND
ND*	1,3-Dichlorobenzene	ND
ND	1,4-Dichlorobenzene	ND
ND	3,3'-Dichlorobenzidine	ND*
ND	Diethyl phthalate	ND
ND		ND
ND	2,4-Dinitrotoluene	ND
ND	2.6-Dinitrotoluene	ND
		ND
ND	Fluoranthene	ND
ND	Fluorene	ND
		ND
ND	Hexachlorobutadiene	ND
ND	Hexachlorocyclopentadiene	ND
		ND
		ND
	ND N	ND Di-n-butyl phthalate ND 1,2-Dichlorobenzene ND* 1,3-Dichlorobenzene ND 1,4-Dichlorobenzene ND 3,3'-Dichlorobenzidine ND Diethyl phthalate ND Dimethyl phthalate ND 2,4-Dinitrotoluene ND 2,6-Dinitrotoluene ND Di-n-octyl phthalate ND Fluoranthene ND Fluorene ND Hexachlorobenzene ND Hexachlorobutadiene ND Hexachlorocyclopentadiene ND Hexachloroethane

```
NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```



LAB #: 2D1601-3 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone Naphthalene Nitrobenzene	ND ND ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit: estimated value)

R (Compound detected in method blank associated with this sample)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	58	(22-135) (10-155)
Fluorobiphenyl	54	(34-140) (12-153)
Terphenyl-d14	30	(10-132) (13-140)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-3 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd

ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	47	(17-95)	(24-118)
Phenol-d5	47	(11-89)	(17-124)
2,4,6-Tribromophenol	30	(10-134)	(10-156)



DATE RECEIVED: 4/16/92

LAB #: 2D1601-3 MATRIX : WATER

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2D1601-3
MATRIX: WATER

DATE RECEIVED:

4/16/92

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	1
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	92	(75-123) (85-126)	(85-138)
Toluene-d8	99	(75-123) (89-124)	(89-128)
Bromofluorobenzene	91	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND
Bis(2-Chloroethyl)ether	ND		ND
Bis(2-Chloroisopropyl)ether	ND		ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1 2 4-Trichlorobenzene	ND

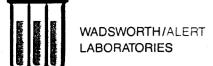
(None Detected, lower detectable limit = 10 ug/L) as rec'd NOTE: ND (None Detected, lower detectable limit = 50 ug/L) as rec'd ND* (Detected, but below quantitation limit: estimated value)

J

(Compound detected in method blank associated with this sample) В

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	56	(22-135) (10-155)
Fluorobiphenyl	53	(34-140) (12-153)
Terphenyl-d14	27	(10-132) (13-140)



LAB #: 2D1601-4 MATRIX: WATER

SAMPLE ID: 3221SW-MW4

NADEP PEN

EXTRACTABLE ORGANICS OTHER COMPOUNDS

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92

4/24/92 DATE ANALYZED:

CERTIFICATION #: E84059

HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

11 ug/L

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ΝП

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	% .	ACCEPTABLE	E LIMITS
		WATER	SOLID
2-Fluorophenol	39	(17-95)	(24-118)
Phenol-d5	37	(11-89)	(17-124)
2,4,6-Tribromophenol	29	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-4 MATRIX : WATER

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-4 MATRIX : WATER

DATE EXTRACTED: 4/30/92 DATE ANALYZED:

5/ 1/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND*		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	13 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	6
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	109	(86-115) (84-124)	(83-128)



LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: DATE EXTRACTED:

4/16/92 NA

DATE ANALYZED:

4/20/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,3,5-Trimethyl benzene	150	ug/L
1,2-Diethyl benzene	37	ug/L
1-(4-Methyl phenyl) ethanone	19	ug/L
1,3-Diethyl benzene	21	ug/L
1-Methyl-3-(1-methylethyl) benzene	77	ug/L
4-Ethyl-1,2-dimethyl benzene	57	ug/L
2-Ethyl-1,4-dimethyl benzene	29	ug/L
2,3-Dihydro-1-methyl-1H-indene	25	ug/L
1-Ethyl-2,3-dimethyl benzene	28	ug/L
1,2,3,4-Tetramethyl benzene	35	ug/L

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

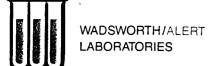
BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
and in deeme	1.12	1,2 Dioniorobonzono	
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Denies (B) Fragrandian		0,0 5102010502141	
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
20.20 (2, 2, 2 0.00		.,	
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
,			

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Applyzed)



LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	* **	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	50	(22-135) (10-155)
Fluorobiphenyl	36	(34-140) (12-153)
Terphenyl-d14	24	(10-132) (13-140)

WADSWORTH/ALERT LABORATORIES

SAMPLE ID: 3221SW-MW5

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 4/16/92 DATE ANALYZED:

4/16/92 4/24/92

NADEP PEN

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

(1-Methlethyl)-benzene	9	ug/L
1,2-Diethyl-benzene	24	ug/L
1,4-Diethyl-benzene	13	ug/L
1,3-Diethyl benzene	15	ug/L
1-Octanol	15	ug/L
1-Methyl-4-(1-methylethyl)-benzene	66	ug/L
2-Ethyl-1,4-dimethyl-benzene	1.5	ug/L
1-Ethyl-3,5-dimethyl-benzene	18	ug/L
2,3-Dihydro-4-methyl-1H-indene	13	ug/L
1,2,3,4-Tetrahydro-naphthalene	8	ug/L

WADSWORTH/ALERT **LABORATORIES**

SAMPLE ID: 3221SW-MW5

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5

DATE RECEIVED: DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

4/16/92

HRS84297

MATRIX: WATER

NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd (Detected, but below quantitation limit; estimated value) J

(Compound detected in method blank associated with this sample) В

(Not Analyzed)

*	ACCEPTABL	ACCEPTABLE LIMITS	
	WATER	SOLID	
38	(17-95)	(24-118)	
38	(11-89)	(17-124)	
31	(10-134)	(10-156)	
	38	WATER 38 (17-95) 38 (11-89)	



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-5 MATRIX : WATER

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	4/28/92	ND	10 ug/L
Cadmium	4/28/92	ND	10 ug/L
Chromium	4/28/92	ND	50 ug/L
Lead	4/28/92	ND	5 ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-5

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

MATRIX : WATER

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-6 MATRIX: WATER DATE RECEIVED:

4/16/92

DATE EXTRACTED:
DATE ANALYZED:

NA 4/20/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

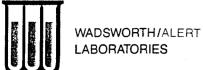
HRS84297

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID LOW LEVEL
1,2-Dichloroethane	92	(75-123) $(85-126)$ $(85-138)$
Toluene-d8	98	(75-123) $(89-124)$ $(89-128)$
Bromofluorobenzene	92	(86-115) (84-124) (83-128)

(Not Analyzed)



LAB #: 2D1601-6 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

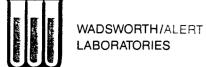
HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)

-- (Not Analyzed)



LAB #: 2D1601-6 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

NADEP PEN

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	58	(22-135) (10-155)
Fluorobiphenyl	109°	(34-140) (12-153)
Terphenyl-d14	31	(10-132) (13-140)

WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS

OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

19 ug/L

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol	ND ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	ROGATE RECOVERY: % ACC	
		WATER SOLID
2-Fluorophenol	42	(17-95) (24-118)
Phenol-d5	43	(11-89) $(17-124)$
2,4,6-Tribromophenol	38	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-6 MATRIX : WATER

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	6	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-6

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

MATRIX : WATER

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	. 1

NOTE: ND (None Detected)



LAB #: 2D1601-12 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/18/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND	(None Detected, lower detectable limit = 1	ug/L) as	rec'd
	ND*	(None Detected, lower detectable limit = 10	ug/L) as	rec'd
	ND**	(None Detected, lower detectable limit =	ug/L) as	rec'd
	J	(Detected, but below quantitation limit; estimated val	ue)	
	В	(Compound detected in method blank associated with thi	s sample)	
		(Not Analyzed)		

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	93	(75-123) (85-126)	(85-138)
Toluene-d8	101	(75-123) $(89-124)$	(89-128)
Bromofluorobenzeue	97	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-12 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: 4/16/92
DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)



WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-12 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-EQUIP BLANK NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

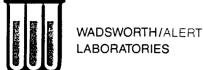
HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	56	(22-135) $(10-155)$
Fluorobiphenyl	54	(34-140) $(12-153)$
Terphenyl-d14	60	(10-132) (13-140)



LAB #: 2D1601-12 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 4/24/92 DATE ANALYZED:

HRS84297

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	39	(17-95)	(24-118)
Phenol-d5	37	(11-89)	(17-124)
2,4,6-Tribromophenol	35	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-12 MATRIX : WATER

SAMPLE ID: 3221SW-EQUIP BLANK NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28- 4/29/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-12 MATRIX: WATER

DATE EXTRACTED: DATE ANALYZED: 4/30/92 5/ 1/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

VolatilesSemi-volatilesMethylene chlorideDimethyl phthalateTolueneDiethly phthalate2-ButanoneDi-n-butyl phthalateAcetoneButyl benzyl phthalateBis (2-ethylhexyl) phthalate

Metals Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC RPD	LIMITS RECOVERY
4,4'-DDT Benzene	0 10	95 86	112 93	16 8	22 20	66-119 39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		ep. method Form range

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



LAB #: 2D1601-BK MATRIX: WATER

DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
•		•	
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Bromome chare	. KD	Echylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
Chioroechane	י או	retraciiroroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND		ND
Chioromethane	עא	1,1,2-Trichloroethane	עא
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
			ND
1,3-Dichlorobenzene	ND	Vinyl chloride	מא
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND	11, 2010 (10002)	
1,2-Dichloroethane	ND		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	81	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	91	(86-115)	(84-124)	(83-128)



LAB #: 2D1601-BK MATRIX: WATER

DATE RECEIVED: 4
DATE EXTRACTED:

DATE ANALYZED:

4/16/92 NA 4/20/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

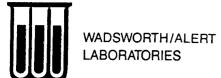
Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	1 ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	96	(86-115) (84-124)	(83-128)



DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92

LAB #: 2D1601-BK MATRIX: WATER

DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

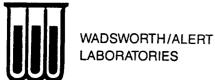
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene		Di-n-butyl phthalate	ND
Anthracene		· •	
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
- action of phonaroco		nexaciioi obataarene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd NOTE: ND ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) В

(Compound detected in method blank associated with this sample)

(Not Analyzed)



LAB #: 2D1601-BK

MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92

DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone ND Naphthalene ND Nitrobenzene ND N-Nitrosodimethylamine ND N-Nitrosodiphenylamine ND N-Nitrosodi-n-propylamine ND Phenanthrene ND Pyrene ND 1,2,4-Trichlorobenzene ND

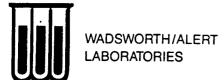
NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ND* ug/L) as rec'd

(Detected, but below quantitation limit: estimated value) J

В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	59	(22-135) (10-155)
Fluorobiphenyl	63	(34-140) (12-153)
Terphenyl-d14	69	(10-132) $(13-140)$



LAB #: 2D1601-BK MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:			lower detectable limit		ug/L) as rec'd
	ND*	(None Detected,	lower detectable limit	= 50	ug/L) as rec'd
	J	(Detected, but b	elow quantitation limit	: estimated	value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	47	(17-95) (24-118)
Phenol-d5	45	(11-89) (17-124)
2,4,6-Tribromophenol	54	(10-134) (10-156)



DATE RECEIVED: 4/16/92

LAB #: 2D1601-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION T LIMIT		
Arsenic	4/28/92	ND	10	ug/L	
Cadmium	4/28/92	ND	10	ug/L	
Chromium	4/28/92	ND	50	ug/L	
Lead	4/28/92	ND	5	ug/L	

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-BK MATRIX : WATER

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

LOWER DETECTION RESULT UNITS LIMIT Total Recoverable Petroleum Hydrocarbons ND mg/L 1

NOTE: ND (None Detected)



MATRIX : WATER
METHOD : 624
RUN ID : W2522

DATE EXTRACTED: N/A
DATE ANALYZED: 04/17/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene	W2522	105 89 89 96	40 56-133 20 67-106 21 78-122 30 64-128
Benzene Dichlorobromomethane		94 88	21 83-123 25 71-123



MATRIX : WATER METHOD : 624 RUN ID : W2545

DATE EXTRACTED: N/A

DATE ANALYZED: 04/20/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC	
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene	W2545	100 88 84	40 56-133 20 67-106 21 78-122	
Benzene Dichlorobromomethane		98 94 90	30 64-128 21 83-123 25 71-123	



LAB ID : LCS MATRIX : WATER

METHOD: 625 RUN ID: S9333 DATE EXTRACTED: 04/16/92 DATE ANALYZED: 04/24/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene Acenaphthene 2,4-Dinitrotoluene Pyrene	S9333	46 48 59 60 37 62	30 31-99_ 41 42-125 43 20-111 36 31-105 40 22-107 32 12-108



MATRIX: WATER METHOD: 625

RUN ID: S9333

DATE EXTRACTED: 04/16/92 DATE ANALYZED: 04/24/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC	
Phenol	S9333	27	37 12-90	
2-Chlorophenol		41	33 30-100	
4-Chloro-3-methylpher	101	44	32 12-109	
4-Nitrophenol		26	42 10-102	
Pentachlorophenol		58	42 10-100	



MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	•
Arsenic (furnace)	04/28/92	04/28/92	88	38 53-131	LCS
Cadmium		04/28/92	97	18 77-113	200
Chromium		04/28/92	112	21 79-121	
Lead (furnace)		04/28/92	99	33 64-132	



MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
TRPH (IR)	04/30/92	05/01/92	100	24 75-124	LCS



LAB ID : 2D1601-1 DATE RECEIVED : 04/16/92 DATE PREPARED : N/A DATE ANALYZED : 04/21/92

MATRIX : WATER
METHOD : 624
RUN ID : W2559/W2560

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC	
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene Benzene Dichlorobromomethane	W2559/W2560	102 88 88 99 96 86	102 90 86 99 96 88	0 2 2 0 0	19 63-123 10 75-115 13 74-113 23 75-122 16 76-126 15 67-114	• •

^{* -} Diluted Out



LAB ID : 2D1601-6 MATRIX : WATER

METHOD: 625

RUN ID: S9340/S9341

DATE RECEIVED : 04/16/92 DATE PREPARED : 04/16/92 DATE ANALYZED : 04/24/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene Acenaphthene 2,4-Dinitrotoluene Pyrene	S9340/S9341	47 57 65 60 67 81	46 57 61 58 65 83	2 0 6 3 3 2	20 16-56_ 29 40-127 15 27-65_ 24 57-104 22 22-81_ 30 58-148

* - Diluted Out



DATE RECEIVED : 04/16/92 DATE PREPARED : 04/16/92 DATE ANALYZED : 04/24/92 LAB ID : 2D1601-6 MATRIX: WATER METHOD: 625 RUN ID: S9340/S9341

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Phenol	S9340/S9341	30	37	21	23 15-97
2-Chlorophenol	•	37	38	3	21 17-89
4-Chloro-3-methylphenol		48	52	8	36 08-101
4-Nitrophenol		54	58	7	34 13-99
4-Nitrophenol	.*	54	58	7	34 13-99
Pentachlorophenol		33	44	29	42 13-96

* - Diluted Out

ADSWORTH/ALERT **LABORATORIES**

5910 Breckenridge Pkwy. Suite H

Chain of Custody Record

(813) 621-0784 Fax (813) 623-6021

Record	of	
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05634 Sampling, testing, mobile labs Tampa, FL 33610 Client: Project Name / Location Parameter NADER No. Sampler(s) fezi ilih Project #: Of CON-**TAINERS** METALS. Remarks Item TRPH. Date Time MATRIX Sample Location PAH 4/15/92 WATER 32215W-EQUIP BLANC 1010 22 4115/52 1035 WATER 345W- MWZ 6 32215W= mW3 4/15/97 Z ح 1135 WATER 1147 3221SW-MWZ z 1/15/97 WATER Z 3221 SW-mw1 6 1200 WATE 7 6, WHER 32215W- DUPLICATE 1210 2 1220 WATER 3771541-MWST 2 32215W MW4 415/57 1230 6 2 WATER 1517 2 Lith 3221 NE_-MU10 hattles fortNA neid broken 11/192 2 WATER 1505 415/92 3221 NE - MW 61 WATER Z 2 ž 4 5 52 TRIPBUNIC Total 58 Number of Coolers in Shipment Bailers Containers Report To: Transfer Item Relinquished By / Company Accepted By / Company Time Date Number(s) Number Wadaworth West Additional Comments: A15 ় 1 4/16/92 10:15 2 3 4 5

Original Accompanies Shipment

6

WADSWORTH/ALERT LABORATORIES Sampling, testing, mobile labs

5910 Breckenridge Pkwy. Suite H Tampa, FL 33610

(813) 621-0784 Fax (813) 623-6021

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Record	 . of _	

05633

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Client: Project Name / Location						Parameter																		
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Item #	Date	Time	MATRIX	Sam	ple Location		TAINERS	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	PAH	METALS.	TAPH /	EDB.		/ ,				<u> </u> -		,		Remarks		
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Chain of Custody Record

WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Clie	ent: ABB Project Name/Number: NADER Lew
Samp	les Received By: Caul Mr Multy Date Received: 4/16/92
Samp	(Signature) 1e Evaluation Form By: All McMulty LAB No: 4265/201601-1613 (Signature)
Туре	of shipping container samples received in? WAL Cooler
	Client Cooler WAL Shipper Box Other
Any	"NO" responses or discrepancies should be explained in comments section.
	YES NO
1.	Were custody seals on shipping container(s) intact?
2.	Were custody papers properly included with samples?
3.	Were custody papers properly filled out (ink, signed, match labels)?
4.	Did all bottles arrive in good condition (unbroken)?
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?
6.	Were correct bottles used for the tests indicated?
7.	Were proper sample preservation techniques indicated?
8.	Were samples received within adequate holding time?
9.	Were all VOA bottles checked for the presence of air bubbles? . \checkmark (If air bubbles were found indicate in comment section)
10.	Were samples in direct contact with wet ice?
11.	Were samples accepted into the laboratory?
	Cooler # 10 Temp 6 °C Cooler # 87 Temp 5 °C
	Cooler # 47 Temp 6 °C Cooler # Temp 6
Comme	nts (3221-MW10-Bn) A bottle broken when red) after listed! Not filled out a to what parameters (voc, PAH, Mutals, TRPH)
<u> </u>	
30T	lle labels have these parameters - 624, BNA, TRPH. AS.Cd. CR. 1

GROUNDWATER SAMPLE ANALYSES

August 29, 1992



5910 Breckenridge Parkway, Suite H 813-621-0784 Tampa, FL 33610

FAX 813-623-6021

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

> TASK ORDER NUMBER: 0015

> > NADEP PENSACOLA

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES 5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-08784

Dan Henson Project Managet

Grylbbs

Laboratory Director - Florida

September 24, 1992



INVOLVEMENT

This report summarizes the analytical results of the NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 01 September 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.

<u>Laboratory ID #</u> 2I0108-2,9,10,11,12

Narrative

The concurrently analyzed laboratory blanks associated with the volatile organic analysis of these samples contained methylene chloride at greater than five times the reported detection limit. Methylene chloride is a common laboratory contaminant and its presence in the samples should be considered suspect.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER METHOD

Volatile Organics

** EPA Method 624

Base/Neutral Acid Extractables

** EPA Method 625

METALS

Arsenic Cadmium Chromium Lead

** EPA Method 206.2 ** EPA Method 200.7 ** EPA Method 200.7

** EPA Method 239.2

MISCELLANEOUS

Tot. Rec. Petroleum Hydrocarbons

** EPA Method 418.1

NOTE:

** Indicates usage of this method to obtain results for this report.

(D) EPA Methods Indicates draft version of this method was used

Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-

79-020, March, 1983. July, 1982

Drinking Waters USEPA, 600/4-88/039, December, 1988.

Standard Methods for the Examination of Water and Waste-water, APHA, 16th edition, 1985.

USEPA Methods

From 40CFR Part 136, published in Federal Register on October

26, 1984.

SW846 Methods

Std. Methods

Test Methods for Evaluating Solid Waste Physical/Chemical

Methods, 3rd Edition, USEPA, 1986.

ASTM Methods NIOSH Method

American Society for Testing and Materials. NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



WADSWORTH/ALERT Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-1 MATRIX: WATER

DATE RECEIVED: 9/1/92 DATE EXTRACTED: DATE ANALYZED: 9/ 2/92

NA

SAMPLE ID: MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane Bromoform Bromomethane	ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride	ND	Methylene chloride	5 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND*	(None Detected, lower detectable limit = 1 (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit =	ug/L) as rec'd ug/L) as rec'd ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated	value)
	В	(Compound detected in method blank associated with	this sample)

	(Not Analyzed)			•
SURROGATE	RECOVERY:	%	ACCEPTABLE LIMITS	

DOIMOONILL MACOVINI.	70	ACCELIADI	P TIWILD	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	95	(75-123)	(85-126)	(85-138)
Toluene-d8	97	(75-123)	(89-124)	(89 - 128)
Bromofluorobenzene	98	(86-115)	(84-124)	(83-128)



LAB #: 2I0108-1 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Warrach lamagera lamanta di ara	M
		Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
B	(Compound detected in method blank associated with this sample) (Not Analyzed)



DATE RECEIVED: 9/1/92

LAB #: 210108-1 MATRIX: WATER

DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	מוא

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	63	(22-135) (10-155)
Fluorobiphenyl	65	(34-140) (12-153)
Terphenyl-d14	88	(10-132) (13-140)



LAB #: 210108-1

SAMPLE ID: MW-1

DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

CERTIFICATION #: E84059

DATE RECEIVED:

MATRIX: WATER

NADEP PEN 3221SW

ACID EXTRACTABLE ORGANICS

HRS84297

9/ 1/92

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected,	lower	detectable	limit =	10	ug/L) a	as rec'd
	ND*	(None Detected,	lower	detectable	limit =	50	ug/L) a	as rec'd

(Detected, but below quantitation limit; estimated value) J

(Compound detected in method blank associated with this sample) В

(Not Analyzed)

SURROGATE RECOVERY:	8	ACCEPTABLE LIMITS WATER SOLID
2-Fluorophenol	71	(17-95) (24-118)
Phenol-d5	61	(11-89) (17-124)
2,4,6-Tribromophenol	62	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-1 MATRIX : WATER

SAMPLE ID : MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



DATE RECEIVED: 9/ 1/92

LAB #: 210108-1 MATRIX : WATER

SAMPLE ID : MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PARAMETER

PREPARATION ANALYSIS DATE

RESULT

LIMIT

Tot Recoverable Pet Hydrocarbons

9/ 9/92

ND

1 mg/L



LAB #: 2I0108-2

SAMPLE ID: MW-2

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 NA 9/ 3/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	10	B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane		_
Chloroethane	ND	Tetrachloroethene	ND	
	112	recracuroroernene	MD	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
-,	***	ATUAT CHIOTIGE	תע	
1,4-Dichlorobenzene	ND	Xylene (Total)	ND	
1,1-Dichloroethane	ND	-		
1,2-Dichloroethane	ND	,		

NOTE:		(None Detected, lower detectable limit = 1	ug/L)	as rec'd
	ND*	(None Detected, lower detectable limit = 10	ug/L)	as rec'd
	ND**	(None Detected, lower detectable limit =	ug/L)	as rec'd
	J	(Detected, but below quantitation limit; estimated	value)	

(Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	*
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



LAB #: 210108-2 MATRIX: WATER DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

HRS84297

SAMPLE ID: MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo (ghi) perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno (1, 2, 3 - cd) pyrene	ND
- .		THOSHO (T' 7' 2 - CO' DATSHE	MD

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)

-- (Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-2 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd	
		(None Detected, lower detectable limit = 50 ug/L) as rec'd	
	J	(Detected, but below quantitation limit: estimated value)	

(Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	63	(22-135) (10-155)
Fluorobiphenyl	67	(34-140) (12-153)
Terphenyl-d14	82	(10-132) $(13-140)$



LAB #: 210108-2 MATRIX: WATER DATE RECEIVED: 9/1/92
DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	79	(17-95)	(24-118)
Phenol-d5	69	(11-89)	(17-124)
2,4,6-Tribromophenol	59	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-2 MATRIX : WATER

SAMPLE ID : MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-2 MATRIX : WATER

SAMPLE ID : MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92

ND

1

mg/L



LAB #: 2I0108-3

SAMPLE ID: MW-3

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA DATE ANALYZED: 9/ 2/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	7 B ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND**	(None Detected, lower detectable limit = 1 (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = (Detected, but below quantitation limit; estimated v	ug/L) as rec'd ug/L) as rec'd ug/L) as rec'd
	В	(Compound detected in method blank associated with t	his sample)

(Not Analyzed)		
SURROGATE RECOVERY:	8	ACCEPTABLE LIMITS

	•	ACCEPTABL	E TIWIIS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	94	(75-123)	(85-126)	(85-138)
Toluene-d8	96	(75-123)	(89-124)	(89 - 128)
Bromofluorobenzene	101	(86-115)	(84-124)	(83-128)



4-Chlorophenyl phenyl ether ND

Chrysene

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-3 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

HRS84297

ND

ND

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene ND Dibenzo (a, h) anthracene ND Acenaphthylene ND Di-n-butyl phthalate ND Anthracene ND 1,2-Dichlorobenzene ND Benzidine ND* 1,3-Dichlorobenzene ND Benzo (a) anthracene ND 1,4-Dichlorobenzene ND Benzo (b) fluoranthene ND 3,3'-Dichlorobenzidine ND* Benzo(k) fluoranthene ND Diethyl phthalate ND Benzo (ghi) perylene ND Dimethyl phthalate ND Benzo (a) pyrene ND 2,4-Dinitrotoluene ND Bis (2-Chloroethoxy) methane ND 2,6-Dinitrotoluene ND Bis (2-Chloroethyl) ether ND Di-n-octyl phthalate ND Bis (2-Chloroisopropyl) ether ND Fluoranthene ND Bis (2-Ethylhexyl) phthalate Fluorene ND 4-Bromophenyl phenyl ether ND Hexachlorobenzene ND Butyl benzyl phthalate ND Hexachlorobutadiene ND 2-Chloronaphthalene ND Hexachlorocyclopentadiene ND

ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

Hexachloroethane

Indeno (1, 2, 3-cd) pyrene



LAB #: 210108-3 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

ND
ND

NOTE:	ND ND* J B	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value) (Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	E LIMITS	
_		WATER	SOLID
Nitrobenzene-d5	65	(22-135)	(10-155)
Fluorobiphenyl	70	(34-140)	(12-153)
Terphenyl-d14	83	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-3 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	ъ	/Company delegated 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

(Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	55	(17-95)	(24-118)
Phenol-d5	44	(11-89)	(17-124)
2,4,6-Tribromophenol	45	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-3 MATRIX : WATER

SAMPLE ID : MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 210108-3

DATE RECEIVED: 9/ 1/92

MATRIX : WATER

SAMPLE ID : MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -**DETECTION** PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L



LAB #: 210108-4 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: NA

DATE ANALYZED:

9/ 2/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND
Benzene	ND		
	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND		
Bromomethane	- 	trans-1,3-Dichloropropene	ND
bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	7 B
Chlorobenzene			-
	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND		
		1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
	- - -		
	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene (Total)	ND
	ND		-14
			
1,2-Dichloroethane	ND		

NOTE:	ND ND* ND** J B	(None Detected, lower detectable limit = 1 (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = (Detected, but below quantitation limit; estimated (Compound detected in method blank associated with (Not Analyzed)	<pre>ug/L) as rec'd ug/L) as rec'd ug/L) as rec'd value) this sample)</pre>
-------	-----------------------------	---	---

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	94	(75-123) (85-126)	(85-138)
Toluene-d8	101	(75-123) (89-124)	(89-128)
Bromofluorobenzene	100	(86-115) (84-124)	(83-128)



LAB #: 2I0108-4 MATRIX: WATER DATE RECEIVED: 9/1/92
DATE EXTRACTED: 9/2/92

DATE ANALYZED:

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059
ORGANICS HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi) perylene	ND	Dimethyl phthalate	ND
Benzo(a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-4 MATRIX: WATER

9/ 1/92 DATE RECEIVED: DATE EXTRACTED: 9/2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone ND Naphthalene ND Nitrobenzene ND N-Nitrosodimethylamine ND N-Nitrosodiphenylamine ND N-Nitrosodi-n-propylamine ND Phenanthrene ND Pyrene ND 1,2,4-Trichlorobenzene ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
		(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLI WATER	E LIMITS SOLID
Nitrobenzene-d5	66	(22-135)	(10-155)
Fluorobiphenyl	74	(34-140)	(12-153)
Terphenyl-d14	94	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4

SAMPLE ID: MW-4

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92 DATE ANALYZED: 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	69	(17-95)	(24-118)
Phenol-d5	63	(11-89)	(17-124)
2,4,6-Tribromophenol	46	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4 MATRIX: WATER DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

EXTRACTABLE ORGANICS
OTHER COMPOUNDS

CERTIFICATION #: E84059

HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1-Unknown

11 ug/L



DATE RECEIVED: 9/ 1/92

LAB #: 210108-4 MATRIX : WATER

SAMPLE ID : MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/I 10 ug/I 50 ug/I	-
Lead	9/10- 9/12/92	ND	5 ug/I	-ù



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-4 MATRIX : WATER

SAMPLE ID : MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons

9/ 9/92

ND

1

mg/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-5 MATRIX: WATER DATE RECEIVED: 9/1/92
DATE EXTRACTED: NA

DATE ANALYZED: 9/2/92

SAMPLE ID: MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane	ND	<pre>cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene</pre>	ND
Bromoform	ND		ND
Bromomethane	ND		ND
Carbon tetrachloride	ND	Methylene chloride	7 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:		(None Detected, lower detectable limit = 1 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	B	(Compound detected in method blank pages and with this service)

ם	(combound defected	TH Me	споа і	DIANK	associated	WICH	cnis	sample)
	(Not Analyzed)							-

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	95	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89 - 124)	(89 - 128)
Bromofluorobenzene	101	(86-115)	(84-124)	(83-128)



LAB #: 2I0108-5

SAMPLE ID: MW-5

DATE RECEIVED: 9/1/92 DATE EXTRACTED:

DATE ANALYZED:

NA

9/ 2/92

MATRIX: WATER

NADEP PEN 3221SW

VOLATILE ORGANICS OTHER COMPOUNDS

CERTIFICATION #: E84059 HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1-Ethyl-2-methyl benzene	11	ug/L
1,3,5-Trimethyl benzene	100	ug/L
1,2-Diethyl benzene	20	ug/L
Substituded benzene	14	ug/L
1,3-Diethyl benzene	11	ug/L
2-Ethyl-1,3-dimethyl benzene	42	ug/L
4-Ethyl-1,2-dimethyl benzene	24	ug/L
2,3-Dihydro-1-methyl-1H-indene	26	ug/L
1,2,3,5-Tetra methyl benzene	21	ug/L
1,2,3,4-Tetra methyl benzene	15	ug/L



LAB #: 210108-5 MATRIX: WATER

SAMPLE ID: MW-5

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

HRS84297

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND		
Chrysene	ND		ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate 2-Chloronaphthalene 4-Chlorophenyl phenyl ether	ND ND ND ND	Fluorene Hexachlorobenzene	ND ND ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-5 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059 NICS HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE: ND ND* J B	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value) (Compound detected in method blank associated with this sample)
	(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5 Fluorobiphenyl	57	(22-135) (10-155)
Terphenyl-dl4	6 4 60	(34-140) (12-153) (10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-5 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
		(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	73	(17-95)	(24-118)
Phenol-d5	6 6	(11-89)	(17 - 124)
2,4,6-Tribromophenol	63	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-5 MATRIX : WATER

SAMPLE ID : MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210108-5 MATRIX : WATER

SAMPLE ID : MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PARAMETER

PARAMETER

PREPARATION ANALYSIS DATE

RESULT

LIMIT

Tot Recoverable Pet Hydrocarbons

9/ 9/92

ND

1 mg/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-6 MATRIX: WATER

SAMPLE ID: MW-6

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED: 9/2/92

9/ 1/92 NA

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

	Acrolein	ND*	1,1-Dichloroethene	ND
	Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND
	Benzene	ND	•	
	Demzene	ND	1,2-Dichloropropane	ND
	Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
	Bromoform	ND	trans-1,3-Dichloropropene	
	Bromomethane	ND	Ethylbenzene	
		MD	renamens	ND
	Carbon tetrachloride	ND	Methylene chloride	8 B
	Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	
	Chloroethane	ND	Tetrachloroethene	ND
		112	1effacuroroe cuene	ND
•	2-Chloroethylvinyl ether	ND	Toluene	ND
	Chloroform	ND	1,1,1-Trichloroethane	ND
	Chloromethane	ND	1,1,2-Trichloroethane	ND
			-,-,	
	Dibromochloromethane	ND	Trichloroethene	ND
	1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
	1,3-Dichlorobenzene	ND	Vinyl chloride	ND
	1,4-Dichlorobenzene	ND	Xylene (Total)	ND
	1,1-Dichloroethane	ND	• • • • • • • • • • • • • • • • • • • •	
	1,2-Dichloroethane	ND		

NOTE:		(None Detected, lower detectable limit = 1 ug/L) as rec'd	Į
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd	1
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd	L
		(Detected, but below quantitation limit; estimated value)	
	TR.	(Compound detected in method blank accordated with this sample)	

	(Not Analyzed)	11001100	D L GILL	abbociatea	WICH	CHIB	sampre,
SURROGATE	RECOVERY:	%	אכיכיו	יאד.ד ק.זפגייסיק	TTC		

SURROGATE RECOVERY:	*	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	102	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 NA 9/ 2/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,3,5-Trimethyl benzene	13	ug/L
2-Ethyl-1,4-dimethyl benzene	7	ug/L
1-Methyl-2-(1-methylethyl) benzene	6	ug/L
1-Methyl-4-(1-methylethyl) benzene	6	ua/L



LAB #: 210108-6 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059
ANICS HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene Benzo(ghi) perylene Benzo(a) pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

	ND* J	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)
_		(Not be all and a)

-- (Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6 MATRIX: WATER

SAMPLE ID: MW-6

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

ND
ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J

(Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE WATER	LIMITS SOLID
Nitrobenzene-d5	71		10-155)
Fluorobiphenyl	83	(34-140) (12-153)
Terphenyl-d14	83	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND:
2-Methyl-4,6-dinitrophenol	ND:
2-Nitrophenol	ND
4-Nitrophenol	ND:
Pentachlorophenol	ND:
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value) J

В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	82	(17-95) (24-118)
Phenol-d5	77	(11-89) (17-124)
2,4,6-Tribromophenol	89	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-6 MATRIX : WATER

SAMPLE ID : MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-6 MATRIX : WATER

SAMPLE ID : MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -**DETECTION** ANALYSIS DATE RESULT **PARAMETER** LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92

ND

1

mg/L



(Not Analyzed)

LAB #: 210108-7

SAMPLE ID: MW-7

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 NA 9/ 2/92

HRS84297

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND
Benzene	ND		
	MD	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND		
Bromomethane		trans-1,3-Dichloropropene	ND
Promomernane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8 B
Chlorobenzene			
	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND		-
Chloromethane		1,1,1-Trichloroethane	ND
Chioromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	4
1,2-Dichlorobenzene	ND		_
-		Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND	njreme (10 car)	HD
1,2-Dichloroethane	ND		

 ND* ND** J	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
В	(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



LAB #: 2I0108-7 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo (b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Donie (u/p) a che	HD :	z, 4 - Diniciocoldene	MD
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	NTD	Fluoranthene	ND
	*		4425
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate /	ND	Hexachlorobutadiene	ND
,			
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
→ ··· · · · · · · · · · · · · · · · · ·		THE CHO (TIME) CO, PITCHE	

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)



LAB #: 2I0108-7

SAMPLE ID: MW-7

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND* J	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
	N.	WATER	SOLID
Nitrobenzene-d5	60	(22-135)	(10-155)
Fluorobiphenyl	71	(34-140)	(12-153)
Terphenyl-d14	79	(10-132)	(13-140)



LAB #: 210108-7

SAMPLE ID: MW-7

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92 DATE ANALYZED: 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol ND 2-Chlorophenol ND 2,4-Dichlorophenol ND 2,4-Dimethylphenol ND 2,4-Dinitrophenol ND* 2-Methyl-4,6-dinitrophenol ND* 2-Nitrophenol ND 4-Nitrophenol ND* Pentachlorophenol ND* Phenol ND 2,4,6-Trichlorophenol ND

(Not Analyzed)

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY: % ACCEPTABLE LIMITS SOLID WATER 2-Fluorophenol 64 (17 - 95)(24-118)Phenol-d5 (17 - 124)57 (11-89)2,4,6-Tribromophenol 75 (10-156)(10-134)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-7 MATRIX : WATER

SAMPLE ID : MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	9/10- 9/13/92	ND	10 ug/L
Cadmium	9/10- 9/13/92	ND	10 ug/L
Chromium	9/10- 9/13/92	ND	50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-7 MATRIX : WATER

SAMPLE ID : MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION - DETECTION
ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/9/92 ND 1 mg/L

NOTE: ND (None Detected)



LAB #: 2I0108-8

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: DATE ANALYZED:

NA 9/ 2/92

HRS84297

MATRIX: WATER

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Ac	rolein	ND*	1,1-Dichloroethene	ND	
Ac	rylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Ве	enzene	ND	1,2-Dichloropropane	ND	
Br	omodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Br	omoform	ND	trans-1,3-Dichloropropene	ND	
Br	comomethane	ND	Ethylbenzene	ND	
Ca	rbon tetrachloride	ND	Methylene chloride	10	В
	lorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Ch	loroethane	ND	Tetrachloroethene	3	
2-	Chloroethylvinyl ether	ND	Toluene	ND	
	loroform	ND	1,1,1-Trichloroethane	ND	
Ch	loromethane	ND	1,1,2-Trichloroethane	ND	
Di	bromochloromethane	ND	Trichloroethene	ND	
1,	2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
-	3-Dichlorobenzene	ND	Vinyl chloride	ND	
1.	4-Dichlorobenzene	ND	Xylene(Total)	ND	
•	1-Dichloroethane	ND	•		
-	2-Dichloroethane	ND			

NOTE:	ND	(None Detected, 1	lower detectable	limit = 1		as rec'd
	ND*	(None Detected, 1	lower detectable	limit = 10	ug/L)	as rec'd
	ND**	(None Detected, 1	lower detectable	limit =	ug/L)	as rec'd
	J	(Detected, but be	elow quantitation	ı limit; estimate	i value)	

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	102	(86-115)	(84-124)	(83-128)



LAB #: 210108-8 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 9/ 1/92 NA

DATE EXTRACTED:

9/ 2/92

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

34	ug/L
8	ug/L
10	ug/L
9	ug/L
12	ug/L
6	ug/L
5	ug/L
•	9 12 6



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-8 MATRIX: WATER

9/ 1/92 DATE RECEIVED: DATE EXTRACTED: 9/ 2/92

9/23/92 DATE ANALYZED:

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

(1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a) anthracene Benzo(b) fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene Benzo(ghi) perylene Benzo(a) pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	10 ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

(None Detected, lower detectable limit = 10 ug/L) as rec'd NOTE: ND (None Detected, lower detectable limit = 50 ug/L) as rec'd ND* (Detected, but below quantitation limit; estimated value) J

(Compound detected in method blank associated with this sample) В



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-8

MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ug/L) as rec'd ND*

(Detected, but below quantitation limit: estimated value) J

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	70	(22-135) (10-155)
Fluorobiphenyl	87	(34-140) (12-153)
Terphenyl-d14	85	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-8 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

MATRIX: WATER
SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	מא

NOTE:		<pre>lower detectable limit = 10 lower detectable limit = 50</pre>	ug/L) as rec'd ug/L) as rec'd
	 (TOWEL GEOGGE TIMES - 50	agin, as rec a

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	69	(17-95) (24-118)
Phenol-d5	63	(11-89) (17-124)
2,4,6-Tribromophenol	73	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-8 MATRIX : WATER

SAMPLE ID : MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-8 MATRIX : WATER

SAMPLE ID : MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



LAB #: 210108-11 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: NA

DATE ANALYZED: 9/3/92

SAMPLE ID: DUPLICATE NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	10	В
Chlorobenzene	ND			_
Chloroethane	ND	Tetrachloroethene	4	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND			
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
	ND			
	Acrylonitrile Benzene Bromodichloromethane Bromoform	Acrylonitrile ND* Benzene ND Bromodichloromethane ND Bromoform ND Bromomethane ND Carbon tetrachloride ND Chlorobenzene ND Chloroethane ND 2-Chloroethylvinyl ether ND Chloroform ND Chloromethane ND Dibromochloromethane ND 1,2-Dichlorobenzene ND 1,3-Dichlorobenzene ND 1,4-Dichlorobenzene ND 1,4-Dichlorobenzene ND 1,1-Dichloroethane ND	Acrylonitrile ND* 1,2-Dichloroethene (Total) Benzene ND 1,2-Dichloropropane Bromodichloromethane ND cis-1,3-Dichloropropene Bromoform ND trans-1,3-Dichloropropene Bromomethane ND Ethylbenzene Carbon tetrachloride ND Methylene chloride Chlorobenzene ND 1,1,2,2-Tetrachloroethane Chloroethane ND Toluene Chloroethylvinyl ether ND Toluene Chloroform ND 1,1,1-Trichloroethane Chloromethane ND Trichloroethane Dibromochloromethane ND Trichloroethane 1,2-Dichlorobenzene ND Trichlorofluoromethane 1,3-Dichlorobenzene ND Vinyl chloride 1,4-Dichlorobenzene ND Xylene (Total) 1,1-Dichloroethane	Acrylonitrile Benzene ND* 1,2-Dichloroethene (Total) ND Bromodichloromethane ND Bromoform ND Bromomethane ND Carbon tetrachloride ND Carbon tetrachloride ND Chloroethane ND Chloroethane ND Carbon tetrachloride ND Chloroethane ND Chloroethane ND Chloroethylvinyl ether ND Chloroform ND Chloromethane ND Chlorometh

NOTE:	ND	(None Detected,	lower detectable	limit =	1	ug/L)	as	rec'd
	ND*	(None Detected, 1	lower detectable	limit =	10			rec'd
		(None Detected, I (Detected, but be				ug/L) value)	as	rec'd

(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		% ACCEPTABI		
		WATER	SOLID	LOW LEVEL		
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)		
Toluene-d8	100	(75-123)	(89 - 124)	(89-128)		
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)		



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-11 MATRIX: WATER DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED:

9/3/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

VOLATILE ORGANICS OTHER COMPOUNDS CERTIFICATION #: E84059 HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,1,2-Trichloro,1,2,2-trifloro ethane 1,3,5-Trimethyl benzene 1,2-Diethyl benzene	12 29 7	ug/L ug/L ug/L
1-Ethyl-2,4-dimethyl benzere	9	ug/L
2,3-Dihydro-1-methyl-1H-indene	6 9	ug/L ug/L



LAB #: 210108-11

MATRIX: WATER

DATE RECEIVED: 9/1/92
DATE EXTRACTED: 9/2/92
DATE ANALYZED: 9/23/92

HRS84297

SAMPLE ID: DUPLICATE NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND.	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
•			

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-11

MATRIX: WATER

DATE RECEIVED: 9/ 1/92

9/ 2/92 DATE EXTRACTED:

DATE ANALYZED: 9/23/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J

(Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	E LIMITS
		WATER	SOLID
Nitrobenzene-d5	64	(22-135)	(10-155)
Fluorobiphenyl	72	(34-140)	(12-153)
Terphenyl-d14	88	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-11 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol	ND ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected,	lower detectable	limit = 10	ug/L) as rec'd
	ND*	(None Detected,	lower detectable	limit = 50	<pre>,ug/L) as rec'd</pre>

J (Detected, but below quantitation limit; estimated value)

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	76	(17-95) (24-118)
Phenol-d5	77	(11-89) (17-124)
2,4,6-Tribromophenol	66	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-11 MATRIX : WATER

SAMPLE ID : DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-11 MATRIX : WATER

SAMPLE ID : DUPLICATE NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

DETECTION PREPARATION -RESULT LIMIT ANALYSIS DATE PARAMETER ND 1 Tot Recoverable Pet Hydrocarbons 9/ 9/92 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-9 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 NA 9/ 3/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND	
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND	
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	10 ND ND	В
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND	
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	5 ND ND	,
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND	

N J B	D* (None D** (None (Detection) (Composition)	Detected, Detected, cted, but h	lower lower	detectable detectable detectable quantitation method blar	limit = limit = limit;	10 estimated	ug/L) ug/L) value)	as as	rec'd rec'd rec'd
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SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	93	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-9 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059
ANICS HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene Benzo(ghi)perylene Benzo(a)pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) B (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED:

9/ 1/92

LAB #: 210108-9

SAMPLE ID: MW-9

DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/ 2/92 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	68	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	74	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-9 MATRIX: WATER DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ИD
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug,	/L) a:	s rec'd
	ND*	(None Detected, lower detectable limit = 50 ug,	/L) a:	s rec'd
	J	(Detected, but below quantitation limit; estimated value)	lue)	

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	72	(17-95) (24-118)
Phenol-d5	6 4	(11-89) (17-124)
2,4,6-Tribromophenol	70	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/1/92

LAB #: 210108-9 MATRIX : WATER

SAMPLE ID : MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-9 MATRIX : WATER

SAMPLE ID : MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

mg/L

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1

NOTE: ND

(None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-10

MATRIX: WATER

SAMPLE ID: MW-10

DATE RECEIVED:

9/ 1/92

DATE EXTRACTED:

NA

DATE ANALYZED:

CERTIFICATION #: E84059

9/ 3/92

NADEP PEN 3221SW

VOLATILE ORGANICS

HRS84297

USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND	
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND	
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	11 ND ND	В
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND	
1,2-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	25 ND ND	
1,1-Dichloroethane	ND ND ND	Xylene(Total)	ND	

NOTE: (None Detected, lower detectable limit = 1 ND ug/L) as rec'd (None Detected, lower detectable limit = 10 ND* ug/L) as rec'd (None Detected, lower detectable limit = ND** ug/L) as rec'd (Detected, but below quantitation limit; estimated value) J В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
1,2-Dichloroethane Toluene-d8 Bromofluorobenzene	96 99 100	WATER SOLID (75-123) (85-126) (75-123) (89-124) (86-115) (84-124)	LOW LEVEL (85-138) (89-128) (83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

HRS84297

SAMPLE ID: MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene ND Dibenzo (a, h) anthracene ND Acenaphthylene ND Di-n-butyl phthalate ND Anthracene ND 1,2-Dichlorobenzene ND Benzidine ND* 1,3-Dichlorobenzene ND Benzo (a) anthracene ND 1,4-Dichlorobenzene ND Benzo (b) fluoranthene ND 3,3'-Dichlorobenzidine ND* Benzo(k) fluoranthene ND Diethyl phthalate ND Benzo(ghi)perylene ND Dimethyl phthalate ND Benzo(a)pyrene ND 2,4-Dinitrotoluene ND Bis (2-Chloroethoxy) methane ND 2,6-Dinitrotoluene ND Bis (2-Chloroethyl) ether ND Di-n-octyl phthalate ND Bis(2-Chloroisopropyl)ether ND Fluoranthene ND Bis(2-Ethylhexyl)phthalate ND Fluorene ND 4-Bromophenyl phenyl ether ND Hexachlorobenzene ND Butyl benzyl phthalate ND Hexachlorobutadiene ND 2-Chloronaphthalene ND Hexachlorocyclopentadiene ND 4-Chlorophenyl phenyl ether ND Hexachloroethane ND Chrysene Indeno (1, 2, 3-cd) pyrene ND

NOTE:	MD.	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)

(Compound detected in method blank associated with this sample) (Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10 MATRIX: WATER DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND
	-100

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec	2' d
		(None Detected, lower detectable limit = 50 ug/L) as rec	ı'd
	J	(Detected, but below quantitation limit: estimated value)	

(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	67	(22-135)	(10-155)
Fluorobiphenyl	74	(34-140)	(12-153)
Terphenyl-d14	83	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

MATRIX: WATER

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В.	(Compound detected in method blank accordated adult this manual)

mpound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
2-Fluorophenol	77	(17-95) (24-118)
Phenol-d5	73	(11-89) (17-124)
2,4,6-Tribromophenol	29	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-10

SAMPLE ID: MW-10

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 9/ 2/92 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

EXTRACTABLE ORGANICS

OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Heptadecane-(8)-Carbonic Acid-(1) 1-Unknown

13 ug/L 19 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-10 MATRIX : WATER

SAMPLE ID : MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-10 MATRIX : WATER

SAMPLE ID : MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION ANALYSIS DATE RESULT PARAMETER LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210107-35 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED:

NA DATE ANALYZED: 9/11/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS HRS84297

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	8 B ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND*	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd	l
	MD	(None Detected, lower detectable limit = ug/L) as rec'd	į.
	J	(Detected, but below quantitation limit; estimated value)	
	B	(Compound detected in method blank accordated with this comple)	

(Not Analyzed)			ubb002u00u	W = 0.11	CILLD	bump1e,
SURROGATE RECOVERY:	%	ACCI	EPTABLE LIM	ITS		•

70	ACCEP IADII	e nimii	
	WATER	SOLID	LOW LEVEL
106	(75-123)	(85-126)	(85-138)
100	(75-123)	(89-124)	(89-128)
99	(86-115)	(84-124)	(83-128)
	106 100	WATER 106 (75-123) 100 (75-123)	WATER SOLID 106 (75-123) (85-126) 100 (75-123) (89-124)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210107-35 MATRIX: WATER

DATE EXTRACTED: 9/4/92 DATE ANALYZED: 9/23/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene Benzo(ghi)perylene Benzo(a)pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Determed 1
	-112	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)

(Compound detected in method blank associated with this sample) В



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0107-35

MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/4/92

DATE ANALYZED:

9/23/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND
= = = = = = = = = = = = = = = = = =	ил

NOTE:	ND	(None Detected, lower detectable limit = 10	
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below grantitable limit = 50	ug/L) as rec'd

below quantitation limit: estimated value)

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5 Fluorobiphenyl Terphenyl-d14	65 77	(22-135) (10-155) (34-140) (12-153)
rerbuenAr-gr4	110	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210107-35 MATRIX: WATER

DATE EXTRACTED: 9/4/92 DATE ANALYZED: 9/23/92

HRS84297

SAMPLE ID: EQUIPMENT BLANK (3221SW)

NADEP PEN 2662W

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol ND 2-Chlorophenol ND 2,4-Dichlorophenol ND 2,4-Dimethylphenol ND 2,4-Dinitrophenol ND* 2-Methyl-4,6-dinitrophenol ND* 2-Nitrophenol ND 4-Nitrophenol ND* Pentachlorophenol ND* Phenol ND 2,4,6-Trichlorophenol ND

NOTE: NI NI J	O* (None Detected, (Detected, but	below quantitation limit: estimated	ug/L) as rec'd ug/L) as rec'd value)
9	(Compared)	below quantitation limit; estimated	value)
	(Not Applymed)	ted in method blank associated with	this sample)

(Not Analyzed)			
SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	

2 - El		WATER	SOLID
2-Fluorophenol	66	(17-95)	(24-118)
Phenol-d5	72	(11-89)	
2,4,6-Tribromophenol	· —	· · · · · · · · · · · · · · · · · · ·	(17-124)
-1.10 ITIDIOMODITEMOT	72	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210107-35 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	9/12- 9/13/92	ND	10	ug/L
Cadmium	9/12- 9/13/92	ND	10	ug/L
Chromium	9/12- 9/13/92	ND	50	ug/L
Lead	9/12/92	ND	5	ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0107-35 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK(3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION LIMIT PARAMETER RESULT ANALYSIS DATE ND Tot Recoverable Pet Hydrocarbons 9/ 9/92 1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-12 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: NA

DATE ANALYZED:

9/ 3/92

SAMPLE ID: TRIP BLANK

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform	ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene	ND ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	10 B ND ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ИD
1,4-Dichlorobenzene	ND	Xylene (Total)	ND
1,1-Dichloroethane	ND	_	
1,2-Dichloroethane	ND		

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
		(Company) detected to make a transfer of the second of the second of

(Compound detected in method blank associated with this sample) (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles Toluene 2-Butanone Acetone

<u>Semi-volatiles</u> Methylene chloride Dimethyl phthalate Diethly phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis (2-ethylhexyl) phthalate

<u>Metals</u> Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery

determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
4,4'-DDT Benzene	0 10	95 86	112 93	16 8	22 20	66 - 119 39 - 150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		cep. method

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED:

NA

HRS84297

DATE ANALYZED: 9/2/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	5 ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1.2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd	i
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd	Ł
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd	L
	J	(Detected, but below quantitation limit; estimated value)	
	В	(Compound detected in method blank associated with this sample)	
		(Not Analyzed)	

SURROGATE RECOVERY:	%	ACCEPTABLE	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	87	(75-123)	(85-126)	(85-138)
Toluene-d8	97	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84 - 124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED:

9/ 1/92

DATE EXTRACTED:
DATE ANALYZED:

NA 9/3/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein		ND*	1,1-Dichloroethene	ND
Acrylonit:	rile	ND*	1,2-Dichloroethene(Total)	ND
Benzene		ND	1,2-Dichloropropane	ИD
Bromodich	loromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform		ND	trans-1,3-Dichloropropene	ND
Bromometh	ane	ND	Ethylbenzene	ND
Carbon te	trachloride	ND	Methylene chloride	11
Chloroben	zene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroeth	-	ND	Tetrachloroethene	ND
01110100011		212	1001001101001101	
2-Chloroe	thylvinyl ether	ND	Toluene	ND
Chlorofor	n	ND	1,1,1-Trichloroethane	ND
Chloromet	hane	ND	1,1,2-Trichloroethane	ND
			.,.,.	
	loromethane	ND	Trichloroethene	ND
1,2-Dichle	orobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichle	orobenzene	ND	Vinyl chloride	ИD
1.4-Dichl	orobenzene	ND	Xylene (Total)	ND
1,1-Dichle		ND	nj rome (rotar)	-11-
-				
1,2-Dichle	oroethane	ND		

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	_	//

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	98	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED: 9/4/92

9/ 1/92 NA

HRS84297

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile	ND*	1,1-Dichloroethene	ND
_	_ - _	1,2-Dichloroethene(Total)	ИD
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane		· · · · · · · · · · · · · · · · · · ·	
DI OMOME CHAME	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	9
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane			
Chioroechane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane			
Chioromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND		
		Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		-12
1,2-Dichloroethane	ND		

NOTE:	ND** J B	(None Detected, lower detectable limit = 1 (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = (Detected, but below quantitation limit; estimated (Compound detected in method blank associated with (Not Analyzed)	ug/L) ug/L) value)	as rec'd as rec'd as rec'd
-------	----------------	---	--------------------	----------------------------------

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	95	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	99	(86-115)	(84 - 124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene	ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate	ND ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND .	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND	(None Detected,	lower detectable limit = 10	ug/L) as rec'd
	ND*	(None Detected,	lower detectable limit = 50	ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

Pyrene

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92 DATE ANALYZED: 9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone ND Naphthalene ND Nitrobenzene ND N-Nitrosodimethylamine ND N-Nitrosodiphenylamine ND N-Nitrosodi-n-propylamine ND Phenanthrene ND

1,2,4-Trichlorobenzene

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value) J

В

(Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	51	(22-135) (10-155)
Fluorobiphenyl	80	(34-140) (12-153)
Terphenyl-d14	82	(10-132) (13-140)

ND

ND



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
		(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)

	(Not Analyzed)		-	
SURROGATE	RECOVERY:	%	ACCEPTABLE LIMITS	

		WATER	SOLID
2-Fluorophenol	76	(17-95)	(24-118)
Phenol-d5	75	(11-89)	(17-124)
2,4,6-Tribromophenol	82	(10-134)	(10-156)



COMPANY : ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210108-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION RESULT LIMIT		
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 10 50	ug/L ug/L ug/L	
Lead	9/10- 9/12/92	ND	5	ug/L	

NOTE: ND (None Detected)



COMPANY : ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

DATE RECEIVED: 9/ 1/92

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



MATRIX: WATER

METHOD: 624

RUN ID: W3854

DATE EXTRACTED: N/A
DATE ANALYZED: 09/02/92

COMPOUND	ANALYTICAL	LCS	QC LIMITS
	RUN ID #	%REC	RPD %REC
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene Benzene Dichlorobromomethane	W3854	90 95 91 94 94 96	40 56-133 20 67-106 21 78-122 30 64-128 21 83-123 25 71-123



MATRIX: WATER
METHOD: 624
RUN ID: W3877

DATE EXTRACTED: N/A
DATE ANALYZED: 09/03/92

COMPOUND	ANALYTICAL	LCS	QC LIMITS
	RUN ID #	%REC	RPD %REC
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene Benzene Dichlorobromomethane	W3877	98 98 90 102 103 97	40 56-133 20 67-106 21 78-122 30 64-128 21 83-123 25 71-123



LAB ID : LCS
MATRIX : WATER
METHOD : 624
RUN ID : W3891

DATE EXTRACTED: N/A
DATE ANALYZED: 09/04/92

COMPOUND	ANALYTICAL	LCS	QC LIMITS
	RUN ID #	%REC	RPD %REC
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene Benzene Dichlorobromomethane	W3891	87 92 91 103 104 100	40 56-133 20 67-106 21 78-122 30 64-128 21 83-123 25 71-123



MATRIX : WATER METHOD : 625

RUN ID : C0445

DATE EXTRACTED: 09/02/92 DATE ANALYZED: 09/17/92

	COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1 1 2	l,4-Dichlorobenzene N-Nitrosodi-n-propylamine L,2,4 Trichlorobenzene Acenaphthene 2,4-Dinitrotoluene Pyrene	C0445	52 52 84 106 104 80	29 17-104 43 36-124 30 20-109 37 54-129 32 27-123 47 34-128



LAB ID : LCS MATRIX : WATER

METHOD: 625 RUN ID: C0445

DATE EXTRACTED: 09/02/92 DATE ANALYZED: 09/17/92

COMPOUND	ANALYTICAL	LCS	QC LIMITS
	RUN ID #	%REC	RPD %REC
Phenol 2-Chlorophenol 4-Chloro-3-methylphenol 4-Nitrophenol Pentachlorophenol	C0445	80 72 55 84 81	45 17-108 37 10-118 48 23-121 56 10-142 49 10-128



MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
Arsenic (furnace) Cadmium Chromium Lead (furnace)	09/10/92 09/10/92	09/13/92 09/13/92 09/13/92 09/12/92	94 97 94 102	38 53-131 18 77-113 21 79-121 33 64-132	LCS



MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS WET CHEMISTRY

PARAMETER	DATE	DATE	LCS	QC LIMITS
	PREPARED	ANALYZED	%REC	RPD %REC
TRPH (IR)	09/09/92	09/09/92	97	24 75-124 LCS
TRPH (IR)	09/09/92	09/09/92	98	24 75-124



LAB ID : 2I0108-1

DATE RECEIVED: 09/01/92

MATRIX: WATER

DATE PREPARED: DATE ANALYZED:

N/A 09/04/92

METHOD: 624

RUN ID: W3895/W3896

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,1-Dichloroethene Trichloroethene	W3895/W3896	100 96	99 97	1 1	19 63-123 10 75-115
Chlorobenzene		95	95	ō	13 74-113
Toluene		106	104	2	23 75-122
Benzene		105	106	1	16 76-126
Dichlorobromomethane		96	96	0	15 67-114

* = Diluted Out



LAB ID : 210108-3 MATRIX : WATER

DATE RECEIVED: 09/02/92 DATE PREPARED: 09/02/92 DATE ANALYZED: 09/23/92

METHOD: 625

RUN ID : E1241/E1242

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene	E1241/E1242	62 70 61	57 66 53		20 16-56_ 29 40-127 15 27-65_
Acenaphthene 2,4-Dinitrotoluene Pyrene		107 84 89	98 82 82	9 2 8	24 57-104 22 22-81 30 58-148

* = Diluted Out



LAB ID : 210108-3 DATE RECEIVED : 09/01/92
MATRIX : -WATER DATE PREPARED : 09/02/92
METHOD : 625 DATE ANALYZED : 09/23/92

RUN ID : E1241/E1242

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Phenol 2-Chlorophenol 4-Chloro-3-methylphenol 4-Nitrophenol Pentachlorophenol	E1241/E1242	61 67 79 52 22	64 58 73 69 26	5 14 8 28 17	23 15-97 21 17-89 36 08-101 34 13-99 42 13-96

* = Diluted Out

LAB ID : 210108-3,4 MATRIX : WATER

DATE RECEIVED :

09/01/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY INORGANIC PARAMETERS - METALS

ELEMENT	DATE PREPARED	DATE ANALYZED	MS %REC	MSD %REC F	RPD	QC LIMITS RPD %REC	LAB ID
Arsenic (furnace) Cadmium Chromium Lead (furnace)	09/13/92 09/13/92 09/13/92 09/13/92	09/13/92 09/13/92 09/13/92 09/12/92	104 96 93 89	105 92 92 90	_	19 80-119 15 76-110 21 74-117 24 76-124	210108-

* = Diluted out



LAB ID : 210108-3,4

MATRIX: WATER

DATE RECEIVED : 09/01/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY INORGANIC PARAMETERS - METALS

ELEMENT	DATE	DATE	MS	MSD	QC LIMITS	LAB
	PREPARED	ANALYZED	%REC	%REC RPD	RPD %REC	ID
Arsenic (furnace) Cadmium Chromium Lead (furnace)	09/13/92 09/13/92 09/13/92 09/13/92	09/13/92 09/13/92	104 96 93 89		21 74-117	210108- 3

^{* =} Diluted out



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED:

4/16/92

LAB ID: 2D1601-BK MATRIX : WATER

DATE EXTRACTED: 4/30/92 DATE ANALYZED:

5/ 1/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



MATRIX : WATER

METHOD : 624 RUN ID : W2522 DATE EXTRACTED: N/A

DATE ANALYZED: 04/17/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1.1-Dichloroethene	W2522	105	40 56-133
Trichloroethene		89	20 67-106
Chlorobenzene		89	21 78-122
Toluene		96	30 64-128
Benzene		94	21 83-123
Dichlorobromomethane		88	25 71-123



LAB ID : LCS MATRIX : WATER METHOD : 624 RUN ID : W2545

DATE EXTRACTED: N/A
DATE ANALYZED: 04/20/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC	
1,1-Dichloroethene	W2545	100	40 56-133	
Trichloroethene		88	20 67-106	
Chlorobenzene		84	21 78-122	
Toluene		98	30 64-128	
Benzene		94	21 83-123	
Dichlorobromomethane		90	25 71-123	



MATRIX : WATER

DATE EXTRACTED: 04/16/92 DATE ANALYZED: 04/24/92

METHOD: 625 RUN ID: S9333

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1,4-Dichlorobenzene	s9333	46	30 31-99_ 41 42 135
N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene	ı	48 59	41 42-125 43 20-111
Acenaphthene		60	36 31-105
2,4-Dinitrotoluene		37	40 22-107
Pyrene		62	32 12-108



MATRIX: WATER METHOD: 625 RUN ID: S9333

DATE EXTRACTED: 04/16/92 DATE ANALYZED: 04/24/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Phenol 2-Chlorophenol 4-Chloro-3-methylphenol	S9333	27 41 44	37 12-90 33 30-100 32 12-109
4-Nitrophenol Pentachlorophenol		26 58	42 10-102 42 10-100



MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
Arsenic (furnace)	04/28/92	04/28/92	88	38 53-131	LCS
Cadmium		04/28/92	97	18 77-113	200
Chromium		04/28/92	112	21 79-121	
Lead (furnace)		04/28/92	99	33 64-132	



MATRIX : WATER

ELEMENT		DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
TRPH (IR)	04/30/92		100	24 75-124	LCS



LAB ID : 2D1601-1

MATRIX : WATER
METHOD : 624
RUN ID : W2559/W2560

DATE RECEIVED : 04/16/92 DATE PREPARED : N/A DATE ANALYZED : 04/21/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,1-Dichloroethene Trichloroethene Chlorobenzene Toluene Benzene Dichlorobromomethane	W2559/W2560	102 88 88 99 96 86	102 90 86 99 96 88	0 2 2 0 0	19 63-123 10 75-115 13 74-113 23 75-122 16 76-126 15 67-114

* - Diluted Out



LAB ID : 2D1601-6 MATRIX: WATER
METHOD: 625

RUN ID: S9340/S9341

DATE RECEIVED: 04/16/92

DATE PREPARED: 04/16/92 DATE ANALYZED: 04/24/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene Acenaphthene 2,4-Dinitrotoluene Pyrene	S9340/S9341	47 57 65 60 67 81	46 57 61 58 65 83	2 0 6 3 3 2	15 27-65_

* - Diluted Out



LAB ID : 2D1601-6 MATRIX : WATER
METHOD : 625

RUN ID: S9340/S9341

DATE RECEIVED : 04/16/92 DATE PREPARED : 04/16/92 DATE ANALYZED : 04/24/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Phenol 2-Chlorophenol 4-Chloro-3-methylphenol 4-Nitrophenol 4-Nitrophenol Pentachlorophenol	S9340/S9341	30 37 48 54 54 33	37 38 52 58 58 44	21 3 8 7 7 29	23 15-97 21 17-89 36 08-101 34 13-99 34 13-99 42 13-96

* - Diluted Out

WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Clie	ent: ABB Project Name/Number: NADER LEW
Samp	ples Received By: Caul McMulty Date Received: 4/16/92
Samp	(Signature) LAB No: 4265/201601-1613 (Signature)
Type	of shipping container samples received in? WAL Cooler
	Client Cooler WAL Shipper Box Other
Any	"NO" responses or discrepancies should be explained in comments section.
	YES NO
1.	Were custody seals on shipping container(s) intact?
2.	Were custody papers properly included with samples?
3.	Were custody papers properly filled out (ink, signed, match labels)?
4.	Did all bottles arrive in good condition (unbroken)?
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?
6.	Were correct bottles used for the tests indicated?
7.	Were proper sample preservation techniques indicated?
8.	Were samples received within adequate holding time?
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)
10.	Were samples in direct contact with wet ice?
11.	Were samples accepted into the laboratory?
	Cooler # 10 Temp 6 °C Cooler # 87 Temp 5 °C
	Cooler # 47 Temp 6 °C Cooler # *C
Comme	
Cs	c not filled out a to what parameters (VOC, PAH, MILES, TRPH)
300	ale labels have these parameters - 624, BNA, TRPH. AS.Cd. CR. Pt

Chain of Custody Record

5910 Breckenridge Pkwy. Suite H Tampa, FL 33610

AUSWORTH/ALERT LABORATORIES Sampling, testing, mobile labs

2 OF 5

(813) 621-0784 Fax (813) 623-6021 Record _____ of ____

05634

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WADSWORTH/ALERT LABORATORIES Sampling, testing, mobile labs

5910 Breckenridge Pkwy. Suite H Tampa, FL 33610

(813) 621-0784 Fax (813) 623-6021

Chain of Custody Record

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GROUNDWATER SAMPLE ANALYSES

August 29, 1992



Division of Enseco Incorporated

5910 Breckenridge Parkway, Suite H 813-621-0784 Tampa, FL 33610

FAX 813-623-6021

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

> TASK ORDER NUMBER: 0015

> > NADEP PENSACOLA

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES 5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-08784

Dan Henson Project Manage

Laboratory Director - Florida

September 24, 1992



INVOLVEMENT

This report summarizes the analytical results of the NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 01 September 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.

<u>Laboratory ID #</u> 2I0108-2,9,10,11,12

Narrative

The concurrently analyzed laboratory blanks associated with the volatile organic analysis of these samples contained methylene chloride at greater than five times the reported detection limit. Methylene chloride is a common laboratory contaminant and its presence in the samples should be considered suspect.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER **METHOD** Volatile Organics ** EPA Method 624 Base/Neutral Acid Extractables ** EPA Method 625 **METALS** Arsenic ** EPA Method 206.2 Cadmium ** EPA Method 200.7 Chromium ** EPA Method 200.7 Lead ** EPA Method 239.2 **MISCELLANEOUS** Tot. Rec. Petroleum Hydrocarbons ** EPA Method 418.1

NOTE:

** Indicates usage of this method to obtain results for this report.

(D) EPA Methods Indicates draft version of this method was used Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-

79-020, March, 1983. July, 1982

Drinking Waters USEPA, 600/4-88/039, December, 1988. Standard Methods for the Examination of Water and Waste-water,

APHA, 16th edition, 1985.

USEPA Methods

Std. Methods

From 40CFR Part 136, published in Federal Register on October

26, 1984.

SW846 Methods

Test Methods for Evaluating Solid Waste Physical/Chemical

Methods, 3rd Edition, USEPA, 1986.

ASTM Methods NIOSH Method American Society for Testing and Materials.

NIOSH Method NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-1

MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 9/ 1/92 NA

DATE ANALYZED:

9/ 2/92

SAMPLE ID: MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
		-	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	5 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2 Chlomothuludes other	1770	PR - 7	M
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1/3 Diditologonic	112	vanyi chicalde	112
1,4-Dichlorobenzene	ND	Xylene (Total)	ND
1,1-Dichloroethane	ND	,	
1,2-Dichloroethane	ND		
_ •			

NOTE:	ND	(None Detected,	lower detectable	limit = 1	ug/L) as rec'd
	ND*	(None Detected,	lower detectable	limit = 10	ug/L) as rec'd
	MD**	(None Detected,	lower detectable	limit =	ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

(Compound detected in method blank associated with this sample) В (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	95	(75-123)	(85-126)	(85-138)
Toluene-d8	97	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	98	(86-115)	(84-124)	(83-128)



LAB #: 2I0108-1 MATRIX: WATER

SAMPLE ID: MW-1

DATE ANALYZED:

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

HRS84297

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

NADEP PEN 3221SW

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene Benzo(ghi) perylene Benzo(a) pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	R	(Compound detected in method blank aggoriated with this sample)



DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/2/92

LAB #: 2I0108-1 MATRIX: WATER

SAMPLE ID: MW-1

DATE ANALYZED:

9/23/92

HRS84297

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

7	
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected,	lower detectable	limit = 10	ug/L) as rec'd
	ND*	(None Detected,	lower detectable	limit = 50	ug/L) as rec'd

(Detected, but below quantitation limit: estimated value) J

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	63	(22-135)	(10-155)
Fluorobiphenyl	65	(34-140)	(12-153)
Terphenyl-d14	88	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-1 MATRIX: WATER

SAMPLE ID: MW-1

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

MATKIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

%	ACCEPTABLE	LIMITS
	WATER	SOLID
71	(17-95)	(24-118)
61	(11-89)	(17-124)
62	(10-134)	(10-156)
	71 61	WATER 71 (17-95) 61 (11-89)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-1 MATRIX : WATER

SAMPLE ID : MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	9/10- 9/13/92	ND	10 ug/L
Cadmium	9/10- 9/13/92	ND	10 ug/L
Chromium	9/10- 9/13/92	ИD	50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-1 MATRIX : WATER

SAMPLE ID : MW-1

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PARAMETER PREPARATION - ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L



LAB #: 2I0108-2

SAMPLE ID: MW-2

DATE EXTRACTED:

9/ 1/92

DATE ANALYZED:

DATE RECEIVED:

NA 9/3/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total)	ND ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	10	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	ИD	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene (Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

NOTE:	ND	(None Detected,	lower	detectable	limit =	1	ug/L)	as	rec'd
	ND*	(None Detected,	lower	detectable	limit =	10	ug/L)	as	rec'd
	ND**	(None Detected,	lower	detectable	limit =		ug/L)	as	rec'd
	J	(Detected, but	below o	quantitation	limit;	estimated	value)		

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



DATE RECEIVED:

9/ 1/92 9/ 2/92

HRS84297

LAB #: 2I0108-2

SAMPLE ID: MW-2

DATE EXTRACTED: DATE ANALYZED:

9/23/92

MATRIX: WATER

CERTIFICATION #: E84059

NADEP PEN 3221SW

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

(1 of 2) USEPA METHOD 625 - GC/MS

Acenaphthene	ND	Dibenzo (a, h) anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	MD
4-Chlorophenyl phenyl ether		Hexachloroethane	ND
Chrysene	ND	Indeno (1, 2, 3 - cd) pyrene	ND
curle	MD	THOCHO (T'T') 2 GG) barene	747

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

В (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-2 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd ND* J (Detected, but below quantitation limit: estimated value)

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	63	(22-135) (10-155)
Fluorobiphenyl	67	(34-140) (12-153)
Terphenyl-d14	82	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-2 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS
		WATER	SOLID
2-Fluorophenol	79	(17-95)	(24-118)
Phenol-d5	69	(11-89)	(17-124)
2,4,6-Tribromophenol	59	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-2 MATRIX : WATER

SAMPLE ID : MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY : ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-2 MATRIX : WATER

SAMPLE ID : MW-2

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION - DETECTION ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L



LAB #: 2I0108-3

SAMPLE ID: MW-3

MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED: 9/ 1/92

DATE ANALYZED:

NA 9/ 2/92

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND
Benzene	ИD	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	7 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene (Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE: ND (None Detected,	lower detectable	limit = 1	ug/L) as rec'd
ND* (None Detected,	lower detectable	limit = 10	ug/L) as rec'd
		lower detectable	limit =	ug/L) as rec'd

(Detected, but below quantitation limit; estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	94	(75-123)	(85-126)	(85-138)
Toluene-d8	96	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	101	(86-115)	(84-124)	(83-128)



DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

LAB #: 210108-3 MATRIX: WATER

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi) perylene	ND	Dimethyl phthalate	ND
Benzo(a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)



9/ 1/92 DATE RECEIVED: 9/ 2/92 DATE EXTRACTED:

LAB #: 2I0108-3

SAMPLE ID: MW-3

DATE ANALYZED: 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	% ACCEPTABLE	
		WATER	SOLID
Nitrobenzene-d5	65	(22-135)	(10-155)
Fluorobiphenyl	70	(34-140)	(12-153)
Terphenyl-d14	83	(10-132)	(13-140)



LAB #: 2I0108-3 MATRIX: WATER

SAMPLE ID: MW-3

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIM WATER SOL	
2-Fluorophenol	55	(17-95) (24-	118)
Phenol-d5	44	(11-89) (17-	124)
2,4,6-Tribromophenol	45	(10-134) (10-	156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-3 MATRIX : WATER

SAMPLE ID : MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	9/10- 9/13/92	ND	10 ug/L
Cadmium	9/10- 9/13/92	ND	10 ug/L
Chromium	9/10- 9/13/92	ND	50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210108-3 MATRIX : WATER

SAMPLE ID : MW-3

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION - DETECTION ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/9/92 ND 1 mg/L



LAB #: 210108-4 MATRIX: WATER DATE RECEIVED:
DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED:

9/2/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	7 B ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND	(None Detected, lower detectable limit = 1	ug/L)	as rec'd
	ND*	(None Detected, lower detectable limit = 10	ug/L)	as rec'd
	ND**	(None Detected, lower detectable limit =	ug/L)	as rec'd
	J	(Detected, but below quantitation limit; estimated v	value)	
	_			

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	94	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

HRS84297

DATE ANALYZED

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo (a, h) anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
	-,-	-,	-1-
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
		-,	-10
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
• • • • • • • • • • • • • • • • • • • •			
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
		-mache (1,2,5 cd,pjiche	

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4 MATRIX: WATER DATE RECEIVED: 9/1/92
DATE EXTRACTED: 9/2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	_	

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	66	(22-135) (10-155)
Fluorobiphenyl	74	(34-140) (12-153)
Terphenyl-d14	94	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	ъ	(Company debants 3 to matter 3 to many and the 3 to 15

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
2-Fluorophenol	69	(17-95) (24-118)
Phenol-d5	63	(11-89) (17-124)
2,4,6-Tribromophenol	46	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-4

SAMPLE ID: MW-4

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 9/ 2/92 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS

OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1-Unknown

11 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-4 MATRIX : WATER

SAMPLE ID : MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug 10 ug 50 ug	/L
Lead	9/10- 9/12/92	ND	5 ug,	/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 210108-4 MATRIX : WATER

SAMPLE ID : MW-4

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PARAMETER

PREPARATION ANALYSIS DATE

RESULT

LIMIT

Tot Recoverable Pet Hydrocarbons

9/ 9/92

ND

1 mg/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-5

SAMPLE ID: MW-5

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: DATE ANALYZED: 9/2/92

NA

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	7 B ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND* ND** J	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID LOW LEVEL
1,2-Dichloroethane	95	(75-123) (85-126) (85-138)

(75-123) (85-126) (85-138) (75-123) (89-124) (89-128) (86-115) (84-124) (83-128) Toluene-d8 99 Bromofluorobenzene 101



LAB #: 2I0108-5

SAMPLE ID: MW-5

DATE EXTRACTED: DATE ANALYZED: 9/2/92

DATE RECEIVED:

9/ 1/92 NA

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1-Ethyl-2-methyl benzene	11	ug/L
1,3,5-Trimethyl benzene	100	ug/L
1,2-Diethyl benzene	20	ug/L
Substituded benzene	14	ug/L
1,3-Diethyl benzene	11	ug/L
2-Ethyl-1,3-dimethyl benzene	42	ug/L
4-Etherl-1 2-dimethyl homes	24	/T
4-Ethyl-1,2-dimethyl benzene	24	ug/L
2,3-Dihydro-1-methyl-1H-indene	26	ug/L
1,2,3,5-Tetra methyl benzene	21	ug/L
1.2.3.4-Tetra methyl benzene	15	ug/L



LAB #: 2I0108-5

MATRIX: WATER

9/ 1/92 DATE RECEIVED: DATE EXTRACTED: 9/ 2/92

9/23/92 DATE ANALYZED:

SAMPLE ID: MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

HRS84297

Acenaphthene	ND	Dibenzo (a, h) anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo (b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo (ghi) perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
Denzo (a) pyrene	ND	Z, T-Dimicrocordene	112
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ИD
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
<u> </u>			

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)



LAB #: 210108-5

SAMPLE ID: MW-5

DATE RECEIVED: 9/ 1/92 9/ 2/92 DATE EXTRACTED: DATE ANALYZED: 9/23/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit: estimated value) В

(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE WATER	LIMITS SOLID
Nitrobenzene-d5	57	(22-135)	(10-155)
Fluorobiphenyl	6 4	(34-140)	(12-153)
Terphenyl-d14	60	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-5 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	
2,4-Dimitrophenol	ND ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE: ИD (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

J

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LI	AITS
		WATER SOI	LID
2-Fluorophenol	73	(17-95) (24-	-118)
Phenol-d5	66	(11-89) (17-	-124)
2,4,6-Tribromophenol	63	(10-134) (10-	-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-5 MATRIX : WATER

SAMPLE ID : MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-5 MATRIX : WATER

SAMPLE ID : MW-5

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -**DETECTION** PARAMETER ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92

ND

1

mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6

SAMPLE ID: MW-6

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED:

9/ 1/92 NA 9/ 2/92

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	8 B ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND*		as rec'd
			as rec'd
	J	(Detected, but below quantitation limit; estimated value)	
	ъ	(Company) debagged to the second control of	

(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89 - 124)	(89-128)
Bromofluorobenzene	102	(86-115)	(84-124)	(83-128)



LAB #: 210108-6 MATRIX: WATER DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED:

9/ 2/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

VOLATILE ORGANICS OTHER COMPOUNDS CERTIFICATION #: E84059 HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,3,5-Trimethyl benzene	13	ug/L
2-Ethyl-1,4-dimethyl benzene	7	ug/L
1-Methyl-2-(1-methylethyl) benzene	6	ug/L
1-Methyl-4-(1-methylethyl) benzene	6	ug/L



LAB #: 210108-6 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND ND
Bis (2-Chloroethoxy) methane Bis (2-Chloroethyl) ether Bis (2-Chloroisopropyl) ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ND* ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	8	ACCEPTABLI WATER	E LIMITS SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	83	(34-140)	(12-153)
Terphenyl-d14	83	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-6 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE EXTRACTED: 9/2/92
DATE ANALYZED: 9/23/92

SAMPLE ID: MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol	ND
•	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	
z-Mecnyi-4,0-dinicrophenoi	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	
rentacutorobuenor	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
		(Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	82	(17-95) (24-118)
Phenol-d5	77	(11-89) (17-124)
2,4,6-Tribromophenol	89	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-6 MATRIX : WATER

SAMPLE ID : MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-6 MATRIX : WATER

SAMPLE ID : MW-6

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-7 MATRIX: WATER

SAMPLE ID: MW-7

DATE EXTRACTED: DATE ANALYZED:

DATE RECEIVED:

9/ 1/92 NA 9/ 2/92

NADEP PEN 3221SW

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS HRS84297

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	4
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND	Xylene (Total)	ND

NOTE:	ND	(None Detected, 1	lower detectable limit	= 1	ug/L)	as rec'd
			lower detectable limit		ug/L)	as rec'd
	MD**	(None Detected, 1	lower detectable limit	=	ug/L)	as rec'd
	J	(Detected, but be	low quantitation limi	t; estimated	value)	

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	8	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	100	(86-115)	(84 - 124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-7 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

HRS84297

SAMPLE ID: MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

(1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo (ghi) perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND ·
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	
Chrysene			ND
CHTABEHE	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L)	as re	ec'd
		(None Detected, lower detectable limit = 50 ug/L)		ec'd
	J	(Detected, but below quantitation limit; estimated value)		

В (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-7

SAMPLE ID: MW-7

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

MATRIX: WATER

_

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower det	tectable limit =	10	ug/L) as	rec'd
	ND*	(None Detected, lower det	tectable limit =	50	ug/L) as	
	J	(Detected, but below quar	utitation limit:	estimated	value)	

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	60	(22-135)	(10-155)
Fluorobiphenyl	71	(34-140)	(12-153)
Terphenyl-d14	79	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-7 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
2-Fluorophenol	64	(17-95) (24-118)
Phenol-d5	5 7	(11-89) (17-124)
2,4,6-Tribromophenol	75	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/1/92

LAB #: 210108-7 MATRIX : WATER

SAMPLE ID : MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-7 MATRIX : WATER

SAMPLE ID : MW-7

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -**DETECTION PARAMETER** ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-8 MATRIX: WATER

SAMPLE ID: MW-8

9/ 1/92 DATE RECEIVED: DATE EXTRACTED: NA DATE ANALYZED: 9/ 2/92

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	10	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	3	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			
-,				

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value) J

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLI	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89 - 124)	(89-128)
Bromofluorobenzene	102	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-8 MATRIX: WATER DATE RECEIVED:
DATE EXTRACTED:
DATE ANALYZED:

CERTIFICATION #: E84059

9/ 1/92 NA 9/ 2/92

HRS84297

SAMPLE ID: MW-8

NADEP PEN 3221SW

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,3,5-Trimethyl benzene 1,2-Diethyl benzene 1-Methyl-3-(1-methylethyl) benzene	34 8 10	ug/L ug/L
4-Ethyl-1,2-dimethyl benzene 2,3-Dihydro-1-methyl-1H-indene 1,2,3,5-Tetra methyl benzene	9 12 6	ug/L ug/L ug/L
1,2,3,4-Tetra methyl benzene	5	ug/L



DATE RECEIVED: DATE EXTRACTED: 9/ 2/92

9/ 1/92

HRS84297

LAB #: 210108-8 MATRIX: WATER

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS (1 of 2) USEPA METHOD 625 - GC/MS

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	10	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ИD
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estim	ated value)

(Compound detected in method blank associated with this sample) В



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-8 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	87	(34-140)	(12-153)
Terphenyl-d14	85	(10-132)	(13-140)



LAB #: 210108-8 MATRIX: WATER DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-8

Phenol

2,4,6-Trichlorophenol

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol ND 2-Chlorophenol ND 2,4-Dichlorophenol ND 2,4-Dimethylphenol ND 2,4-Dinitrophenol ND* 2-Methyl-4,6-dinitrophenol ND* 2-Nitrophenol ND 4-Nitrophenol ND* Pentachlorophenol ND*

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

ND

ND

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL1	E LIMITS
		WATER	SOLID
2-Fluorophenol	69	(17-95)	(24-118)
Phenol-d5	63	(11-89)	(17-124)
2,4,6-Tribromophenol	73	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-8 MATRIX : WATER

SAMPLE ID : MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-8 MATRIX : WATER

SAMPLE ID : MW-8

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



LAB #: 2I0108-11 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED:

9/3/92

HRS84297

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein ND* 1,1-Dichloroethene ND Acrylonitrile ND* 1,2-Dichloroethene (Total) ND Benzene ND 1,2-Dichloropropane ND Bromodichloromethane ND cis-1,3-Dichloropropene ND Bromoform ND trans-1,3-Dichloropropene ND Bromomethane ND Ethylbenzene ND Carbon tetrachloride ND Methylene chloride 10 B Chlorobenzene ND 1,1,2,2-Tetrachloroethane ND Chloroethane ND Tetrachloroethene 2-Chloroethylvinyl ether ND Toluene ND Chloroform ND 1,1,1-Trichloroethane ND Chloromethane ND 1,1,2-Trichloroethane ND Dibromochloromethane ND Trichloroethene ND 1,2-Dichlorobenzene ND Trichlorofluoromethane ND 1,3-Dichlorobenzene ND Vinyl chloride ND 1,4-Dichlorobenzene ND Xylene(Total) ND 1,1-Dichloroethane ND 1,2-Dichloroethane ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ND* ug/L) as rec'd (None Detected, lower detectable limit = ND** ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	97	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89 - 128)
Bromofluorobenzene	100	(86-115)	(84-124)	(83-128)



LAB #: 210108-11

MATRIX: WATER

DATE RECEIVED:

9/ 1/92

DATE EXTRACTED: DATE ANALYZED:

NA 9/3/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

VOLATILE ORGANICS OTHER COMPOUNDS CERTIFICATION #: E84059

HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,1,2-Trichloro,1,2,2-trifloro ethane 1,3,5-Trimethyl benzene 1,2-Diethyl benzene	12 29 7	ug/L ug/L ug/L
1-Ethyl-2,4-dimethyl benzene	9	ug/L
2,3-Dihydro-1-methyl-1H-indene	6 9	ug/L ug/L



LAB #: 210108-11

MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

HRS84297

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)pyrene	ND ND ND	Diethyl phthalate Dimethyl phthalate 2,4-Dinitrotoluene	ND ND
Bis(2-Chloroethoxy)methane Bis(2-Chloroethyl)ether Bis(2-Chloroisopropyl)ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND
Bis(2-Ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	ND ND ND	Fluorene Hexachlorobenzene Hexachlorobutadiene	ND ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	10	(Company & Ashanta & San and S

(Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-11 MATRIX: WATER

DATE RECEIVED: 9/ 1/92

DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

ND
ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit: estimated value) В

(Compound detected in method blank associated with this sample) (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
•		WATER SOLID
Nitrobenzene-d5	6 4	(22-135) (10-155)
Fluorobiphenyl	72	(34-140) (12-153)
Terphenyl-d14	88	(10-132) (13-140)



LAB #: 210108-11 MATRIX: WATER DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 1	l0 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 5	ug/L) as rec'd
	J	(Detected, but below quantitation limit; e	stimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLI	E LIMITS
		WATER	SOLID
2-Fluorophenol	76	(17-95)	(24-118)
Phenol-d5	77	(11-89)	(17-124)
2,4,6-Tribromophenol	66	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-11 MATRIX : WATER

SAMPLE ID : DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION RESULT LIMIT				
Arsenic	9/10- 9/13/92	ND	10	ug/L			
Cadmium	9/10- 9/13/92	ND		ug/L			
Chromium	9/10- 9/13/92	ND		ug/L			
Lead	9/10- 9/12/92	ND	5 1	ug/L			

NOTE: ND (None Detected)



DATE RECEIVED: 9/ 1/92

LAB #: 210108-11 MATRIX : WATER

SAMPLE ID : DUPLICATE

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION - DETECTION ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-9 MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED: 9/3/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	10 1	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	_
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	5	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L)	as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L)	as rec'd
		(None Detected, lower detectable limit = ug/L)	as rec'd
	J	(Detected, but below quantitation limit; estimated value)	
	D	If the management of the state	

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	93	(75-123)	(85-126)	(85-138)
Toluene-d8	99	(75-123)	(89 - 124)	(89-128)
Bromofluorobenzene	97	(86-115)	(84-124)	(83-128)



LAB #: 210108-9

MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ИD	2,4-Dinitrotoluene	ND
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE:	ND	(None Detected, low	er detectable limit =	10 ug/	L) as rec'd
	ND*	(None Detected, low	er detectable limit =	50 ug/	L) as rec'd
	J	(Detected, but below	v quantitation limit;	estimated valu	ıe)

(Compound detected in method blank associated with this sample)



LAB #: 210108-9 MATRIX: WATER DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/23/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None	Detected,	lower	detectable	limit	=	10		ug/L)	as	rec'd
	ND*	(None	Detected,	lower	detectable	limit	=	50	_	ug/L)	as	rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLI	E LIMITS
		WATER	SOLID
Nitrobenzene-d5	68	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	74	(10-132)	(13-140)



LAB #: 210108-9 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND
2,1 Didniolophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as	rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as	rec'd
	J	(Detected, but below quantitation limit; estimated value)	

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER SOLID	
2-Fluorophenol	72	(17-95) (24-118))
Phenol-d5	64	(11-89) (17-124))
2,4,6-Tribromophenol	70	(10-134) (10-156))



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-9 MATRIX : WATER

SAMPLE ID : MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-9 MATRIX : WATER

SAMPLE ID : MW-9

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION ANALYSIS DATE RESULT **PARAMETER** LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 1 ND mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-10

SAMPLE ID: MW-10

DATE RECEIVED: DATE EXTRACTED: DATE ANALYZED: 9/3/92

9/ 1/92 NA

HRS84297

MATRIX: WATER

NADEP PEN 3221SW

CERTIFICATION #: E84059

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride	ND	Methylene chloride	11	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	_
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	25	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

NOTE:	ND* ND** J B	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)
		(Not Analyzed)

(NOT Analyzed)				
SURROGATE RECOVERY:	%	ACCEPTABLE	LIMITS	I.OW T.FVFT.

1,2-Dichioroethane	96	(75-123)	(85-126)	(85-138)	
Toluene-d8	99	•	(89-124)	•	
Bromofluorobenzene	100		(84-124)		



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10

210108-10

MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/23/92

SAMPLE ID: MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene ND Dibenzo (a, h) anthracene ND Acenaphthylene ND Di-n-butyl phthalate ND Anthracene ND 1,2-Dichlorobenzene ND Benzidine ND* 1,3-Dichlorobenzene ND Benzo (a) anthracene ND 1,4-Dichlorobenzene ND Benzo (b) fluoranthene ND 3,3'-Dichlorobenzidine ND* Benzo(k) fluoranthene ND Diethyl phthalate ND Benzo (ghi) perylene ND Dimethyl phthalate ND Benzo (a) pyrene ND 2.4-Dinitrotoluene ND Bis (2-Chloroethoxy) methane ND 2,6-Dinitrotoluene MD Bis (2-Chloroethyl) ether ND Di-n-octyl phthalate ND Bis (2-Chloroisopropyl) ether ND Fluoranthene ND Bis (2-Ethylhexyl) phthalate ND Fluorene ND 4-Bromophenyl phenyl ether ND Hexachlorobenzene ND Butyl benzyl phthalate ND Hexachlorobutadiene ND 2-Chloronaphthalene ND Hexachlorocyclopentadiene ND 4-Chlorophenyl phenyl ether ND Hexachloroethane ND Chrysene ND Indeno(1,2,3-cd)pyrene ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10

MATRIX: WATER

DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED:

9/23/92

SAMPLE ID: MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:		(None Detected, lower detectable limit = 10	ug/L) as rec'd
		(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated	i value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE	E LIMITS
_		WATER	SOLID
Nitrobenzene-d5	67	(22-135)	(10-155)
Fluorobiphenyl	74	(34-140)	(12-153)
Terphenyl-d14	83	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-10

SAMPLE ID: MW-10

DATE EXTRACTED: 9/ 2/92

DATE RECEIVED: 9/ 1/92

MATRIX: WATER

NADEP PEN 3221SW

DATE ANALYZED: 9/23/92

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	ıΤ	(Detected, but below quantitation limit, estimated value)

(Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	8	ACCEPTABLE	LIMITS
		WATER	SOLID
2-Fluorophenol	7 7	(17-95)	(24-118)
Phenol-d5	73	(11-89)	(17-124)
2,4,6-Tribromophenol	29	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-10 MATRIX: WATER

SAMPLE ID: MW-10

DATE RECEIVED: DATE EXTRACTED: 9/ 1/92 9/ 2/92

DATE ANALYZED:

9/23/92

EXTRACTABLE ORGANICS

OTHER COMPOUNDS

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Heptadecane-(8)-Carbonic Acid-(1) 1-Unknown

13 ug/L

19 ug/L



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-10 MATRIX : WATER

SAMPLE ID : MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION LIMIT		
Arsenic Cadmium Chromium	9/10- 9/13/92 9/10- 9/13/92 9/10- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L	
Lead	9/10- 9/12/92	ND	5 ug/L	

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-10 MATRIX : WATER

SAMPLE ID : MW-10

NADEP PEN 3221SW

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION PARAMETER ANALYSIS DATE RESULT LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210107-35 MATRIX: WATER

DATE RECEIVED: 9/ 1/92 DATE EXTRACTED: NA

DATE ANALYZED: 9/11/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

(Not Analyzed)

CERTIFICATION #: E84059

VOLATILE ORGANICS

HRS84297

USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene (Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
•			
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
CHIOLOGCHAME	מא	terracutoroernene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene			
1,5-Dichiolopenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene (Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd	i
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd	Ĺ
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd	i
	J	(Detected, but below quantitation limit; estimated value)	
	В	(Compound detected in method blank aggodiated with this sample)	

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	106	(75-123)	(85-126)	(85-138)
Toluene-d8	100	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	99	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

SAMPLE ID: EQUIPMENT BLANK (3221SW)

LAB #: 210107-35

DATE RECEIVED: DATE EXTRACTED: 9/4/92 DATE ANALYZED: 9/23/92

9/ 1/92

HRS84297

MATRIX: WATER

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (1 of 2)

NADEP PEN 2662W

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND		
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo (a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Denzo (D) Llucianthene	MD	3,3°-Dichiolopenzidine	MD
Benzo(k) fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
Denzo (a, pyrene	. M D	2,4-Dinitiotoluene	MD
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis (2-Chloroethyl) ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
	112	ridoranciene	112
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
- aug au au au au au au au au au au au au au		nondonioi obu cudi cuc	112
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno (1, 2, 3 - cd) pyrene	ND
Arra & D. Cry. C.	717	THREHO (T'7') - CR' DAT GHG	717

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

В (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210107-35

MATRIX: WATER

DATE RECEIVED: 9/ 1/92

DATE EXTRACTED: 9/4/92 DATE ANALYZED: 9/23/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	65	(22-135) (10-155)
Fluorobiphenyl	77	(34-140) (12-153)
Terphenyl-d14	110	(10-132) (13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0107-35

MATRIX: WATER

DATE RECEIVED: 9/1/92

DATE EXTRACTED: 9/4/92

DATE ANALYZED: 9/23/92

SAMPLE ID: EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	TD.	(Compound deboated in mathe a black annual test salety this annual test

(Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS WATER SOLID	
2-Fluorophenol	66	(17-95) (24-118)
Phenol-d5	72	(11-89) (17-124))
2,4,6-Tribromophenol	72	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210107-35 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK (3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic Cadmium Chromium	9/12- 9/13/92 9/12- 9/13/92 9/12- 9/13/92	ND ND ND	10 ug/L 10 ug/L 50 ug/L
Lead	9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 2I0107-35 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK(3221SW) NADEP PEN 2662W

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -**DETECTION** PARAMETER ANALYSIS DATE RESULT LIMIT

Tot Recoverable Pet Hydrocarbons 9/ 9/92

ND

1 mg/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2I0108-12 MATRIX: WATER

DATE RECEIVED: 9/1/92 DATE EXTRACTED: NA

DATE ANALYZED: 9/3/92

SAMPLE ID: TRIP BLANK

NADEP PEN 3221SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	<pre>cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene</pre>	ND
Bromoform	ND		ND
Bromomethane	ND		ND
Carbon tetrachloride	ND	Methylene chloride	10 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND	(None Detected, lower detectable limit = 1	ug/L)	as rec'd
	ND*	(None Detected, lower detectable limit = 10		as rec'd
	MD**	(None Detected, lower detectable limit =	ug/L)	as rec'd
	J	(Detected, but below quantitation limit; estimated	value)	-

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIN	AITS
		WATER SOI	LID LOW LEVEL
1,2-Dichloroethane	99	(75-123) (85-	-126) (85-138)
Toluene-d8	100	(75-123) (89-	-124) (89-128)
Bromofluorobenzene	97	(86-115) (84-	·124) (83-128)



QUALITY CONTROL SECTION

- Quality Control Summary
- · Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles Toluene 2-Butanone Acetone

Semi-volatiles Methylene chloride Dimethyl phthalate Diethly phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis (2-ethylhexyl) phthalate

Metals Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery

determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
4,4'-DDT Benzene	0 10	95 86	112 93	16 8	22 20	66 - 119 39 - 150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		cep. method rform range

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/1/92 DATE EXTRACTED:

NA

DATE ANALYZED:

9/ 2/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	<pre>cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene</pre>	ND ND
Carbon tetrachloride	ND	Methylene chloride	5
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene (Total)	ND

NOTE:	ND* ND** J B	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY	LIMITS	
1,2-Dichloroethane Toluene-d8 Bromofluorobenzene	SOLID (85-126) (89-124)	LOW LEVEL (85-138) (89-128) (83-128)
Toluene-d8 Bromofluorobenzene		9-124) 4-124)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92 NA

DATE ANALYZED:

9/ 3/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	11 ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND	(None Detected, low	ver detectable limit	= 1	ug/L)	as rec'd
	ND*	(None Detected, low	ver detectable limit	= 10		as rec'd
	MD**	(None Detected, low	ver detectable limit	=		as rec'd
	J	(Detected, but below	w quantitation limit	: estimated	value)	

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
1 0 54		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	98	(75-123) (85-126) (85-138)
Toluene-d8	98	(75-123) (89-124) (89-128)
Bromofluorobenzene	100	(86-115) (84-124) (83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

9/ 1/92

DATE ANALYZED: 9/4/92

NA

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	9 ND ND
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

NOTE:	ND	(None Detected,	lower detectable limit =	1 ug/L) as rec'd	ı
			<pre>lower detectable limit =</pre>		L
	MD**	(None Detected,	<pre>lower detectable limit =</pre>	ug/L) as rec'd	Ĺ
	J	(Detected, but b	elow quantitation limit;	estimated value)	

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	99	(75-123)	(85-126)	(85-138)
Toluene-d8	95	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	99	(86-115)	(84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER DATE RECEIVED: 9/1/92
DATE EXTRACTED: 9/2/92

DATE ANALYZED: 9/1

9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 ANICS HRS84297

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo (a, h) anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a) anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b) fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo (ghi) perylene	ND	Dimethyl phthalate	ND
Benzo (a) pyrene	ND	2,4-Dinitrotoluene	ND
benzo (a, p, rene	ND	Z, 4 Diniciocoldeno	
Bis (2-Chloroethoxy) methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis (2-Chloroisopropyl) ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno (1, 2, 3-cd) pyrene	ND

NOTE:	ND	(None Detected,	lower detectable	limit =	10 ug/	L) as rec'd
	ND*	(None Detected,	lower detectable	limit =	50 ug/	L) as rec'd
	-	195 - 4 1 5 - 5 - 1		7 1 1		1

J (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/1/92 DATE EXTRACTED: 9/2/92 DATE ANALYZED: 9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	- %	ACCEPTABLE	E LIMITS
		WATER	SOLID
Nitrobenzene-d5	51	(22-135)	(10-155)
Fluorobiphenyl	80	(34-140)	(12-153)
Terphenyl-d14	82	(10-132)	(13-140)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 210108-BK MATRIX: WATER

DATE RECEIVED: 9/ 1/92
DATE EXTRACTED: 9/ 2/92

DATE ANALYZED: 9/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND* ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)

J (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	%	ACCEPTABL	E LIMITS
		WATER	SOLID
2-Fluorophenol	76	(17-95)	(24-118)
Phenol-d5	75	(11-89)	(17-124)
2,4,6-Tribromophenol	82	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 9/ 1/92

LAB #: 210108-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	9/10- 9/13/92	ND	10 ug/L
Cadmium	9/10- 9/13/92	ND	10 ug/L
Chromium	9/10- 9/13/92	ND	50 ug/L
Lead	9/10- 9/12/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 9/ 1/92

LAB #: 2I0108-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

ANALYTICAL REPORT

PREPARATION -DETECTION ANALYSIS DATE RESULT PARAMETER LIMIT Tot Recoverable Pet Hydrocarbons 9/ 9/92 ND 1 mg/L

NOTE: ND (None Detected)



MATRIX: WATER

METHOD: 624

RUN ID: W3854

DATE EXTRACTED: N/A
DATE ANALYZED: 09/02/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC	
1,1-Dichloroethene	W3854	90	40 56-133	
Trichloroethene		95	20 67-106	
Chlorobenzene		91	21 78-122	
Toluene		94	30 64-128	
Benzene		94	21 83-123	
Dichlorobromomethane		96	25 71-123	



MATRIX : WATER

METHOD: 624 RUN ID: W3877

DATE EXTRACTED: N/A

DATE ANALYZED: 09/03/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1,1-Dichloroethene	W3877	98	40 56-133
Trichloroethene		98	20 67-106
Chlorobenzene		90	21 78-122
Toluene		102	30 64-128
Benzene		103	21 83-123
Dichlorobromomethane		97	25 71-123



MATRIX: WATER

METHOD: 624

RUN ID: W3891

DATE EXTRACTED: N/A
DATE ANALYZED: 09/04/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
1,1-Dichloroethene Trichloroethene	W3891	87 92	40 56-133 20 67-106
Chlorobenzene		91	21 78-122
Toluene		103	30 64-128
Benzene		104	21 83-123
Dichlorobromomethane		100	25 71-123



LAB ID : LCS
MATRIX : WATER
METHOD : 625
RUN ID : C0445

DATE EXTRACTED: 09/02/92 DATE ANALYZED: 09/17/92

COMPOUND	ANALYTICAL	LCS	QC LIMITS
	RUN ID #	%REC	RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene Acenaphthene 2,4-Dinitrotoluene Pyrene	C0445	52 52 84 106 104 80	29 17-104 43 36-124 30 20-109 37 54-129 32 27-123 47 34-128



MATRIX: WATER METHOD: 625

RUN ID : C0445

DATE EXTRACTED: 09/02/92 DATE ANALYZED: 09/17/92

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS RPD %REC
Phenol	C0445	80	45 17-108
2-Chlorophenol		72	37 10-118
4-Chloro-3-methylph	enol	55	48 23-121
4-Nitrophenol		84	56 10-142
Pentachlorophenol		81	49 10-128



MATRIX : WATER

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
Arsenic (furnace) Cadmium		09/13/92 09/13/92	94 97	38 53-131 18 77-113	LCS
Chromium Lead (furnace)	09/10/92	09/13/92 09/13/92 09/12/92	94 102	21 79-121 33 64-132	



MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS WET CHEMISTRY

PARAMETER	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	_
TRPH (IR) TRPH (IR)		09/09/92 09/09/92	97 98	24 75-124 LC 24 75-124	



LAB ID : 2I0108-1 DATE RECEIVED : 09/01/92

MATRIX : WATER DATE PREPARED : N/A

METHOD: 624 DATE ANALYZED: 09/04/92

RUN ID: W3895/W3896

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC	
1,1-Dichloroethene Trichloroethene Chlorobenzene	W3895/W3896	100 96 95	99 97 95	1 1 0	19 63-123 10 75-115 13 74-113	
Toluene		106	104	2	23 75-122	
Benzene		105	106	1	16 76-126	
Dichlorobromomethane		96	96	0	15 67-114	

* = Diluted Out



LAB ID: 210108-3 MATRIX: WATER

METHOD: 625

RUN ID : E1241/E1242

DATE RECEIVED: 09/02/92

DATE PREPARED : 09/02/92 DATE ANALYZED : 09/23/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
1,4-Dichlorobenzene N-Nitrosodi-n-propylamine 1,2,4 Trichlorobenzene Acenaphthene	E1241/E1242	62 70 61 107	57 66 53 98	8 6 14 9	20 16-56_ 29 40-127 15 27-65_ 24 57-104
2,4-Dinitrotoluene Pyrene		84 89	82 82	2 8	22 22-81 30 58-148

^{* =} Diluted Out



LAB ID : 210108-3 MATRIX : WATER

METHOD: 625

RUN ID : E1241/E1242

DATE RECEIVED: 09/01/92 DATE PREPARED: 09/02/92 DATE ANALYZED: 09/23/92

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC
Phenol	E1241/E1242	61	64	5 5	23 15-97
2-Chlorophenol	•	67	58	14	21 17-89
4-Chloro-3-methylphenol		79	73	8	36 08-101
4-Nitrophenol		52	69	28	34 13-99
Pentachlorophenol		22	26	17	42 13-96

* = Diluted Out

GROUNDWATER SAMPLE ANALYSES

January 25, 1992



Sampling, testing, mobile labs

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015

NAS/NADEP PENSACOLA - PHASE II

Presented to:

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson Project Manager

Randall C. Grubbs Laboratory Director - Florida

Randall C. Grubbs/m

February 12, 1992





February 12, 1992

Mr. Roger Durham ABB Environmental Services, Inc. 2571 Executive Center Circle East Suite 100 Tallahassee, FL 32301

Dear Mr. Durham:

Over the course of the past month, it was noted that toluene has begun randomly appearing in samples, trip blanks and equipment blanks at levels ranging from about 2 ug/L to about 22 ug/L. We have investigated its presence and feel that we have located the source of this random contamination problem.

WAL began using custom printed sample container labels this past fall. At that time we evaluated the labels for any trace contaminants and found none. In late December we received a second shipment of identical labels and began using them for sampling kits sent out after 20 December 1991. The investigation of the toluene contamination led us to evaluate this second shipment of labels as well. Upon evaluation, it was found that these labels are contaminated with Toluene as well as 2-Butanone (MEK). Given that these are volatile compounds it can be demonstrated that, under certain conditions, these compounds might migrate across the septum of the sample vial.

We have discontinued use of these labels and are attempting to reissue new labels and bottles for any sample kits which are still pending. In addition we are working with the printer to determine why these labels were not made to our previously determined specifications. We have also established a policy of testing all label batches before they may be used in any kits.

The impact which these findings have on any recent or current analytical data must be determined on an individual basis. If you have any questions regarding this matter or would like to further investigate particular results, please contact your project manager or myself at (813) 621-0784. Thank you for your patience and help in this matter.

Sincerely,

Wadsworth/ALERT Laboratories

N. Myron Gunsalus, Jr.

Quality Control Coordinator



HEADQUARTERS AND LABORATORY P.O. Box 2912 4101 Shuffel Drive, N.W. North Canton, OH 44720 (216) 497-9396 REGIONAL LABORATORY P.O. Box 31454 5405 Schaaf Rd. Cleveland, OH 44131 (216) 642-9151 REGIONAL OFFICE 1445 Pisgah Church Rd. Lexington, SC 29072 (803) 957-8590 REGIONAL LABORATORY 5910 Breckenridge Pkwy Suite H Tampa, FL 33610 (813) 621-0784



INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola - Phase II site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Roger Durham. The samples were accepted into Wadsworth's Florida facility on 28 January 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or noncompliant items have been noted below.

<u>Laboratory ID #</u> 2A2813-1,2,3,5,6,7

Narrative

The laboratory blank concurrently analyzed with these samples for volatile organic compounds contained methylene chloride. This compound is a common laboratory contaminant and its presence in the samples should be considered suspect.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER METHOD ORGANICS Volatile Organics ** EPA Method 624 Base/Neutral Acid Extractables ** EPA Method 625 **METALS** Arsenic ** EPA Method 206.2 Cadmium ** EPA Method 200.7 Chromium ** EPA Method 200.7 Lead ** EPA Method 239.2 **MISCELLANEOUS**

Tot. Rec. Petroleum Hydrocarbons

** EPA Method 418.1

NOTE: ** Indicates usage of this method to obtain results for this report. EPA Methods -Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982 Drinking Waters USEPA, 600/4-88/039, December, 1988. Std. Methods -Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985. USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984. SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986. ASTM Methods -American Society for Testing and Materials. NIOSH Method -NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



DATE RECEIVED:

1/28/92

LAB #: 2A2813-1 MATRIX: WATER

DATE EXTRACTED: DATE ANALYZED:

NA 2/ 4/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND	
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND	
Benzene	ND	1,2-Dichloropropane	ND	
·	14.5	1,2 Dichiolopropane	1112	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform	ND	trans-1,3-Dichloropropene	ND	
Bromomethane	ND	Ethylbenzene	ND	
		•		
Carbon tetrachloride	ND	Methylene chloride	12	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND	
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			
-,				

NOTE:	ND	(None Detected, lower detectable limit = 1	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND**	(None Detected, lower detectable limit =	ug/L) as rec'd
	J	(Detected, but below quantitation limit: est	imated value)

(Compound detected in method blank associated with this sample) В

SURROGATE RECOVERY:	• •	ACCEPTABLE LIMITS	-
Comodita about the		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	106	(75-123) (85-126)	(85-138)
Toluene-d8	102	(75-123) (89-124)	(89-128)
Bromofluorobenzene	98	(86-115) (84-124)	(83-128)



LAB #: 2A2813-1 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

DATE ANALYZED:

2/ 6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

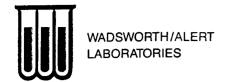
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane Bis(2-Chloroethyl)ether Bis(2-Chloroisopropyl)ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd ND*

(Detected, but below quantitation limit; estimated value) J

В (Compound detected in method blank associated with this sample)



LAB #: 2A2813-1

MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

DATE ANALYZED: 2/ 6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Inanhanana	ND
Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit: estimated value) В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	119	(22-135) (10-155)
Fluorobiphenyl	38	(34-140) (12-153)
Terphenyl-d14	56	(10-132) (13-140)



LAB #: 2A2813-1 MATRIX: WATER DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

CERTIFICATION #: E84059

HRS84297

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND*
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
		(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	42	(17-95) $(24-118)$
Phenol-d5	71	(11-89) $(17-124)$
2,4,6-Tribromophenol	82	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 2A2813-1

DATE RECEIVED: 1/28/92

MATRIX : WATER

SAMPLE ID: MW 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	2/4/92	ND	10 ug/L
Cadmium	2/4/92	ND	1 ug/L
Chromium	2/ 4/92	ND	50 ug/L
Lead	2/ 4- 2/ 5/92	ND	5 ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-1

DATE RECEIVED: DATE EXTRACTED: 1/28/92 1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: MW 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-2

SAMPLE ID: PZ 1

DATE EXTRACTED:
DATE ANALYZED: 2

NA 2/4/92

MATRIX: WATER

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Deliberio	ND	1,2 Dichioloptopane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
		2011, 1001120110	
Carbon tetrachloride	ND	Methylene chloride	13 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
	•		
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
		-,-,-	
Dibromochloromethane	ND	Trichloroethene	ND
1.2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
•		• • • • • • • • • • • • • • • • • • • •	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND	•	
1,2-Dichloroethane	ND		

NOTE:	ND	(None Detected, lower detectable limit = 1	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND**	(None Detected, lower detectable limit =	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated	value)
	В	(Compound detected in method blank associated with	this sample)
	-,	(Not Analyzed)	

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	109	(75-123) (85-126)	(85-138)
Toluene-d8	102	(75-123) (89-124)	(89-128)
Bromofluorobenzene	100	(86-115) (84-124)	(83-128)



LAB #: 2A2813-2 MATRIX: WATER DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	
zacji sensji phenatace	ND	nexacutoronucadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd

ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



LAB #: 2A2813-2

MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

DATE ANALYZED: 2/6/92

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	90	(22-135) (10-155)
Fluorobiphenyl	36	(34-140) (12-153)
Terphenyl-d14	62	(10-132) (13-140)



LAB #: 2A2813-2 MATRIX: WATER

DATE RECEIVED: 1/28/92 1/31/92 DATE EXTRACTED:

DATE ANALYZED:

2/ 6/92

SAMPLE ID: PZ 1

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND*
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

```
NOTE:
              (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50
        ND
                                                                               ug/L) as rec'd
        ND*
                                                                               ug/L) as rec'd
        J
              (Detected, but below quantitation limit; estimated value)
        В
              (Compound detected in method blank associated with this sample)
              (Not Analyzed)
```

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS		
		WATER SOLID		
2-Fluorophenol	34	(17-95) (24-118)		
Phenol-d5	53	(11-89) (17-124)		
2,4,6-Tribromophenol	78	(10-134) (10-156)		



DATE RECEIVED: 1/28/92

LAB #: 2A2813-2 MATRIX : WATER

SAMPLE ID: PZ 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE RESULT		DETECTION LIMIT	
Arsenic	2/4/92	ND	10 u	ıg/L
Cadmium	2/4/92	ND		ıg/L
Chromium	2/ 4/92	ND	50 u	ıg/L
Lead	2/ 4- 2/ 5/92	ND	5 v	ıg/L

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB ID: 2A2813-2

DATE EXTRACTED: DATE ANALYZED:

1/30/92 1/30/92

MATRIX : WATER

SAMPLE ID: PZ 1 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-3

DATE EXTRACTED: DATE ANALYZED: NA 2/4/92

MATRIX: WATER

SAMPLE ID: PZ 2 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein Acrylonitrile Benzene	ND* ND ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	15 B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	15
2-Chloroethylvinyl ether	ND	Toluene	16
Chloroform	3	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	1	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABL	E LIMITS	•
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	114	(75-123)	(85-126)	(85-138)
Toluene-d8	101	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	99	(86-115)	(84-124)	(83-128)



DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

LAB #: 2A2813-3 MATRIX: WATER

SAMPLE ID: PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS
USEPA METHOD 8270 - GC/MS (1 of 2)

HRS84297

Acenaphthene Acenaphthylene Anthracene	ND ND ND	Dibenzo(a,h)anthracene Di-n-butyl phthalate 1,2-Dichlorobenzene	ND ND ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
<u> </u>	ND	Hexachlorobutadiene	ND
Butyl benzyl phthalate	ND	nexactioroducautene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
 		· • • · · · ·	

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



LAB #: 2A2813-3

MATRIX: WATER

DATE RECEIVED:

1/28/92

DATE EXTRACTED: 1/31/92

DATE ANALYZED:

2/ 6/92

SAMPLE ID: PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 8270 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	NĐ
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
		(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	91	(22-135) (10-155)
Fluorobiphenyl	19	(34-140) (12-153)
Terphenyl-d14	58	(10-132) $(13-140)$



LAB #: 2A2813-3 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/6/92

HRS84297

SAMPLE ID: PZ 2 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol	ND ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND*
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS
·		WATER SOLID
2-Fluorophenol	37	(17-95) (24-118)
Phenol-d5	74	(11-89) (17-124)
2,4,6-Tribromophenol	38	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 2A2813-3

DATE RECEIVED: 1/28/92

MATRIX : WATER

SAMPLE ID : PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	2/ 4/92	ND	10 ug/L
Cadmium	2/ 4/92	ND	10 ug/L
Chromium	2/ 4/92	ND	50 ug/L
Lead	2/ 4- 2/ 5/92	ND	5 ug/L

(None Detected) NOTE: ND



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-3

MATRIX : WATER

DATE RECEIVED: DATE EXTRACTED:

1/28/92 1/30/92

DATE ANALYZED:

1/30/92

SAMPLE ID: PZ 2

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2A2813-4
MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: NA DATE ANALYZED: 2/5/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	79B
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	9
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	16 ND ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	

NOTE:	ND	(None Detected, lower detectable limit = 1 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	ų.
		WATER SOLID	TOM TEAET
1,2-Dichloroethane	107	(75-123) (85-126)	(85-138)
Toluene-d8	102	(75-123) $(89-124)$	(89-128)
Bromofluorobenzene	98	(86-115) (84-124)	(83-128)



LAB #: 2A2813-4 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/ 6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Antin acene	110	1,2 Dichiorobenzene	
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Delizo(b)11doi diferiene	110	o,o biemorobenziane	112
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Denzo(a) pyrene	ND	2) + Biniterocordence	N.D
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
210(1 0101012021021,1,0001	1		1.2
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
Dutyl Benzyl phonarate	,,,,	nexaciioi obu dadiciic	1.2
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
Oni j sene	114	Indeno(I) Die Cu/Pilene	

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ND* ug/L) as rec'd (Detected, but below quantitation limit; estimated value) J

(Compound detected in method blank associated with this sample) В



DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

LAB #: 2A2813-4 MATRIX: WATER

DATE ANALYZED: 2/6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

```
NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd

ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	130	(22-135) (10-155)
Fluorobiphenyl	36	(34-140) (12-153)
Terphenyl-d14	56	(10-132) $(13-140)$



LAB #: 2A2813-4 MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/ 6/92

SAMPLE ID: PZ 3

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE: (None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) В (Compound detected in method blank associated with this sample) (Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABL	E LIMITS
		WATER	SOLID
2-Fluorophenol	40	(17-95)	(24-118)
Phenol-d5	34	(11-89)	(17-124)
2,4,6-Tribromophenol	41	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 1/28/92

LAB #: 2A2813-4 MATRIX : WATER

SAMPLE ID: PZ 3 NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	2/4/92	ND	10 ug/L
Cadmium	2/4/92	ND	10 ug/L
Chromium	2/ 4/92	ND	50 ug/L
Lead	2/ 4- 2/ 5/92	ND	5 ug/L

NOTE: ND (None Detected)



SAMPLE ID: PZ 3 NADEP PENSACOLA/ 3221 SW

DATE RECEIVED:

1/28/92

LAB ID: 2A2813-4

DATE EXTRACTED: DATE ANALYZED: 1/30/92 1/30/92

MATRIX : WATER

•

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-5

SAMPLE ID: DUPLICATE

DATE EXTRACTED: DATE ANALYZED:

NA 2/ 5/92

MATRIX: WATER

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059 HRS84297

VOLATILE ORGANICS

USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND	
Bromoform Bromomethane	ND ND	trans-1,3-Dichloropropene Ethylbenzene	ND ND	
Carbon tetrachloride	ND	Methylene chloride	18	В
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane		
Chloroethane	ND	Tetrachloroethene	ND	
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

			-
SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	ı
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	112	(75-123) (85-126) (85-138)
Toluene-d8	101	(75-123) (89-124) (89-128)
Bromofluorobenzene	97	(86-115) (84-124	(83-128)



LAB #: 2A2813-5 MATRIX: WATER DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92

DATE ANALYZED: 2/6/92

HRS84297

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-5

DATE EXTRACTED: 1/31/92

MATRIX: WATER

Terphenyl-d14

DATE ANALYZED: 2/6/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE: (None Detected, lower detectable limit = 10 ND ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value) J (Compound detected in method blank associated with this sample) В (Not Analyzed)

(10-132)

(13-140)

SURROGATE RECOVERY: X ACCEPTABLE LIMITS WATER SOLID 88 Nitrobenzene-d5 (22-135)(10-155)Fluorobiphenyl 13 (34-140)(12-153)

56



LAB #: 2A2813-5 MATRIX: WATER DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/6/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 8270 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND* ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Applyzed)

SURROGATE RECOVERY:	X.	ACCEPTABLE LIMITS
	•	WATER SOLID
2-Fluorophenol	47	(17-95) (24-118)
Phenol-d5	58	(11-89) $(17-124)$
2,4,6-Tribromophenol	59	(10-134) (10-156)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-5 MATRIX : WATER

SAMPLE ID : DUPLICATE NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	2/4/92	ND	10	ug/L
Cadmium	2/ 4/92	ND	10	ug/L
Chromium	2/ 4/92	ND	50	ug/L
Lead	2/ 4- 2/ 5/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB ID: 2A2813-5

DATE EXTRACTED:

1/30/92

MATRIX : WATER

DATE ANALYZED:

1/30/92

SAMPLE ID: DUPLICATE

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-6 MATRIX: WATER DATE EXTRACTED: DATE ANALYZED:

NA 2/ 5/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND	
Bromodichloromethane Bromoform	ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene	ND ND	
Bromomethane	ND	Ethylbenzene	ND	
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	13 ND ND	В
2-Chloroethylvinyl ether	ND	Toluene	ND	
Chloroform	ND	1,1,1-Trichloroethane	ND	
Chloromethane	ND	1,1,2-Trichloroethane	ND	
Dibromochloromethane	ND	Trichloroethene	ND	
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND	
1,3-Dichlorobenzene	ND	Vinyl chloride	ND	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND	
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			

NOTE:		(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd
	MDT	(None Detected, lower detectable limit = 10 dg/L) as rec d
	ND**	(None Detected, lower detectable limit = ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Applyand)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	•
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	108	(75-123) (85-126)	(85-138)
Toluene-d8	103	(75-123) (89-124)	(89-128)
Bromofluorobenzene	98	(86-115) (84-124)	(83-128)



DATE RECEIVED:

1/28/92

LAB #: 2A2813-6 MATRIX: WATER DATE EXTRACTED: DATE ANALYZED:

NA 2/ 5/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS OTHER COMPOUNDS HRS84297

Acetone

13 ug/L

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations



1/28/92 DATE RECEIVED: DATE EXTRACTED: 1/31/92

LAB #: 2A2813-6 MATRIX: WATER

DATE ANALYZED: 2/ 6/92

SAMPLE ID: EQUIPMENT BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND*	1,3-Dichlorobenzene	ND
	ND	1,4-Dichlorobenzene	ND
	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 ug/L) as rec'd NOTE: ND ug/L) as rec'd ND* J (Detected, but below quantitation limit; estimated value)

(Compound detected in method blank associated with this sample) В

(Not Analyzed)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-6

DATE EXTRACTED: 1/31/92 2/ 6/92

MATRIX: WATER DATE ANALYZED:

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1.2.4-Trichlorobenzene	ND

```
NOTE:
       ND
            (None Detected, lower detectable limit = 10
                                                                 ug/L) as rec'd
            (None Detected, lower detectable limit = 50
                                                                 ug/L) as rec'd
       ND*
            (Detected, but below quantitation limit: estimated value)
       J
       В
            (Compound detected in method blank associated with this sample)
            (Not Analyzed)
```

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	104	(22-135) (10-155)
Fluorobiphenyl	19	(34-140) (12-153)
Ternhenyl-d14	61	(10-132) (13-140)



DATE RECEIVED: 1/28/92

LAB #: 2A2813-6

DATE EXTRACTED: 1/31/92

MATRIX: WATER

DATE ANALYZED:

2/ 6/92

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS

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NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50	ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated	value)
	В	(Compound detected in method blank associated with	this sample)

(Not Analyzed)

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	48	(17-95) (24-118)
Phenol-d5	71	(11-89) (17-124)
2.4.6-Tribromophenol	89	(10-134) (10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 1/28/92

LAB #: 2A2813-6 MATRIX : WATER

SAMPLE ID : EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT		
Arsenic	2/ 4/92	ND	10	ug/L	
Cadmium	2/4/92	ND	10	ug/L	
Chromium	2/ 4/92	ND	50	ug/L	
Lead	2/ 4- 2/ 5/92	ND	5	ug/L	

NOTE: ND (None Detected)



DATE RECEIVED: 1/28/92

LAB ID: 2A2813-6

DATE EXTRACTED:

1/30/92 DATE ANALYZED: 1/30/92

MATRIX : WATER

SAMPLE ID: EQUIPMENT BLANK NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



DATE RECEIVED: 1

1/28/92

LAB #: 2A2813-7 MATRIX: WATER DATE EXTRACTED: DATE ANALYZED:

NA 2/ 5/92

SAMPLE ID: TRIP BLANK

NADEP PENSACOLA/ 3221 SW

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND	
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND	
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	14 B ND ND	;
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	3 ND ND	
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND 2 ND	
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND	

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

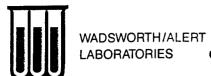
B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	*	ACCEPTABL	E LIMITS	
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	114	(75-123)	(85-126)	(85-138)
Toluene-d8	102	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	96	(86-115)	(84-124)	(83-128)



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

<u>Volatiles</u>	
Methylene	chlorid
Toluene	
2-Butanone	3
Acetone	

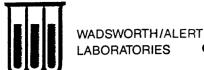
Semi-volatiles
Dimethyl phthalate
Diethly phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

Metals Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	٩	MSD REC	RPD .	QC RPD	LIMITS RECOVERY
4,4'-DDT Benzene	0 10	95 86		112 93	16 8	22 20	66-119 39-150
(cmpd. name)	sample result	lst% recov.	2nd% recov.	Rel.% diff.	accep. methor		

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



LAB #: 2A2813-BK
MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: NA

DATE EXTRACTED: NA
DATE ANALYZED: 2/4/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total)	ND ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	8
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1.2-Dichloroethane	ND		

NOTE:	ND* ND** J	(, quantities, colimated	
	В	(Compound detected in method blank associated with	this sample)
		(Not Analyzed)	- ,

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS	3
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	108	(75-123) (85-120	S) (85 - 138)
Toluene-d8	99	(75-123) (89-124	(89-128)
Bromofluorobenzene	96	(86-115) (84-124	(83-128)



LAB #: 2A2813-BK

1,4-Dichlorobenzene

1,1-Dichloroethane

1,2-Dichloroethane

DATE RECEIVED: DATE EXTRACTED:

1/28/92 NA

MATRIX: WATER

DATE ANALYZED:

2/ 4/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #:

E84059 HRS84297

ND

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein ND* 1,1-Dichloroethene ND Acrylonitrile ND* 1,2-Dichloroethene(Total) ND Benzene ND 1,2-Dichloropropane ND Bromodichloromethane ND cis-1,3-Dichloropropene ND Bromoform ND trans-1,3-Dichloropropene ND Bromomethane ND Ethylbenzene ND Carbon tetrachloride ND Methylene chloride Chlorobenzene ND 1,1,2,2-Tetrachloroethane ND Chloroethane ND Tetrachloroethene 2-Chloroethylvinyl ether ND Toluene ND Chloroform ND 1,1,1-Trichloroethane ND Chloromethane ND 1,1,2-Trichloroethane ND Dibromochloromethane ND Trichloroethene ND 1,2-Dichlorobenzene ND Trichlorofluoromethane ND 1,3-Dichlorobenzene ND Vinyl chloride ND

ND

ND

ND

NOTE:	ND* ND** J	(None Detected, lower detectable limit = 1 ug/L) as rec'd (None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = ug/L) as rec'd (Detected, but below quantitation limit; estimated value) (Compound detected in method blank associated with this sample)
		(Not Analyzed)

Xylene(Total)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	Ŋ.
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	101	(75-123) (85-126)	(85-138)
Toluene-d8	102	(75-123) (89-124)	, ,
Bromofluorobenzene	99	(86-115) (84-124)	•



LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: NA
DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND*		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	1
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	7
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	103	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	96	(86-115) (84-124)	(83-128)



LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92
DATE EXTRACTED: 1/31/92
DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND*	1,3-Dichlorobenzene	ND
	ND	1,4-Dichlorobenzene	ND
	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dimitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND
Bis(2-Chloroethyl)ether	ND		ND
Bis(2-Chloroisopropyl)ether	ND		ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND
4-Chlorophenyl phenyl ether	ND		ND
Chrysene	ND		ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)



LAB #: 2A2813-BK

MATRIX: WATER

DATE RECEIVED: 1/28/92

DATE EXTRACTED: 1/31/92

DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS (2 of 2)

HRS84297

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS	
		WATER SOLID	
Nitrobenzene-d5	41	(22-135) (10-155)	
Fluorobiphenyl	84	(34-140) $(12-153)$	
Terphenyl-d14	83	(10-132) $(13-140)$	



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB #: 2A2813-BK MATRIX: WATER

DATE RECEIVED: 1/28/92 DATE EXTRACTED: 1/31/92 DATE ANALYZED: 2/5/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND*	(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	· %	ACCEPTABLE LIMITS			
		WATER SOLID			
2-Fluorophenol	19	(17-95) (24-118)			
Phenol-d5	14	(11-89) $(17-124)$			
2,4,6-Tribromophenol	15	(10-134) $(10-156)$			



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 1/28/92

LAB #: 2A2813-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	2/4/92	ND	10	ug/L
Cadmium	2/ 4/92	ND	10	ug/L
Chromium	2/ 4/92	ND	50	ug/L
Lead	2/ 4/92	ND	5	ug/L

NOTE: ND (None Detected)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. LAB ID: 2A2813-BK
MATRIX: WATER

DATE RECEIVED: DATE EXTRACTED:

1/28/92 1/30/92

DATE ANALYZED:

1/30/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2A2813-LCS

MATRIX: WATER METHOD: 624

DATE RECEIVED:

01/28/92

DATE EXTRACTED: NA

DATE ANALYZED:

02/04/92

LABORATORY CHECK SAMPLE

COMPOUND	LCS %REC	QC LIMITS %RECOVERY	
1,1-Dichloroethene	68	56-133	
Trichloroethene	96	67-106	
Chlorobenzene	96	78-122	*
Toluene	97	64-128	
Benzene	88	83-123	
Dichlorobromomethane	87	71-123	



LAB #: 2A2813-LCS MATRIX: WATER

METHOD: 624

DATE RECEIVED:

01/28/92

DATE EXTRACTED: NA

DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE

COMPOUND	LCS %REC	QC LIMITS %RECOVERY	
1,1-Dichloroethene	101	F.C. 100	
	101	56-133	
Trichloroethene	95	67-106	
Chlorobenzene	99	78-122	
Toluene	94	64-128	
Benzene	88	83-123	
Dichlorobromomethane	82	71-123	



2A2813-LCS LAB #:

MATRIX: WATER METHOD: 625

DATE RECEIVED:

01/28/92

DATE EXTRACTED: 01/31/92

DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY	
1,2,4-Trichlorobenzene	69	20-111	
Acenaphthene	96	31-105	
2,4-Dinitrotoluene	64	22-107	
Pyrene	107	12-108	
Nitrosodipropylamine	106	42-125	
1,4-Dichlorobenzene	82	31-99	



LAB #: 2A2813-LCS

MATRIX: WATER METHOD: 625

DATE RECEIVED:

01/28/92

DATE EXTRACTED: 01/31/92

DATE ANALYZED:

02/05/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REG	QC LIMITS RECOVERY	
Pentachlorophenol	14	10-100	-
Pheno1	57	12-90	
2-Chlorophenol	64	30-100	
4-Chloro-o-cresol	15	12-109	
4-Nitrophenol	36	10-102	



LAB #:

2A2813-LCS

MATRIX: WATER

DATE RECEIVED:

01/28/92

DATE PREP'D:

02/04/92

DATE ANALYZED:

02/04/92

LABORATORY CHECK SAMPLE RECOVERY

COMPOUND	LCS %REC	QC LIMITS RECOVERY	
Arsenic, furnace	80	54-130	
Cadmium	104	78-113	
Chromium	106	79-121	
Lead, furnace	92	64-131	



LAB #:

2A2813-LCS

MATRIX: WATER

DATE RECEIVED:

01/28/92

DATE EXTRACTED:

01/30/92

DATE ANALYZED:

01/30/92

LABORATORY CHECK SAMPLE

COMPOUND

LCS %REC QC LIMITS RECOVERY

Tot. Rec. Petroleum Hydrocarbons

104

75-124



LAB#:

2A2813-1

MATRIX: METHOD:

WATER 624

DATE RECEIVED:

01/28/92

DATE EXTRACTED: NA

DATE ANALYZED: 02/05/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	MS %REC	MSD %REC	RPD	RPD Q	C LIMITS RECOVERY
1,1-Dichloroethene	76	88	15	19	63-123
Trichloroethene	91	91	0	10	75-115
Chlorobenzene	91	92	1	13	74-113
Toluene	120	127	6	23	75-122
Benzene	83	88	6	16	76-126
Dichlorobromomethane	82	86	5	15	67-114



LAB #:

2A2813-1,2

MATRIX:

WATER

DATE RECEIVED: 01/28/92

DATE EXTRACTED: 02/04/92

DATE ANALYZED: 02/04/92 to

02/05/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY INORGANIC PARAMETERS - METALS

ELEMENT	MS	MSD	RPD	QC LIMITS		
	%REC	%REC		RPD	RECOVERY	
Arsenic, furnace	86	90	4	19	80-119	
Cadmium	102	103	1 .	15	76-110	
Chromium	105	105	0	21	74-117	
Lead, furnace	101	100	1	24	76-124	

WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Cli	ent: ABB Project Name/Number: N	ADEP-	Pensacol
Sam	ples Received By: Carol McMuty Date Received:	1/281	92
Sam	(Signature) ple Evaluation Form By: Curl Mc Multy (Signature) (Signature)		
Тур	e of shipping container samples received in? WAL Cooler		_
	Client Cooler WAL Shipper Box Other		
Any	"NO" responses or discrepancies should be explained in comments	section	1.
		YES	NO
1.	Were custody seals on shipping container(s) intact?	· 💢	
2.	Were custody papers properly included with samples?	. <u>X</u>	
3.	Were custody papers properly filled out (ink, signed, match labels)?	. <u>X</u>	
4.	Did all bottles arrive in good condition (unbroken)?	· _X	
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?	. <u>×</u>	
6.	Were correct bottles used for the tests indicated?	. <u>×</u>	
7.	Were proper sample preservation techniques indicated?	. <u>×</u>	-
8.	Were samples received within adequate holding time?	. <u>×</u>	
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)	· ×	
10.	Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW)	· ×	
11.	Were samples accepted into the laboratory?	· >	
	Cooler # Temp °C Cooler # Temp _		°C
	Cooler # *C Cooler # Temp		°C
Comn	ents:		
		16	

WADSWORTH/ALERT LABORATORIES - FLORIDA 🚕

5910-H BRECKENRIDGE PARKWAY/TAMPA, FL \$3610 (813) 621-0784

Chain-of Custody Record

Nº

4808

PROJ.	NO.	PROJE	CT N	AME	/LOCATION			T	 				-3)				
NAPER PENSACOLA /3221 SW					NO.		PARAMETER										
SAMPLERS: (Signature) Rogullu, all L Starr					OF CON- TAINERS									REMARKS			
STA. NO.	DATE	TIME	COMP.	GRAB.		STATIO	N LOCATION	TAINE TO	!	Ser.	X)		\r\ \r\				·
	125/42	1000				M	WI	6	2.	2	1	١					
	1/25/92					P:	₹ 1	6	2	2	١	1				,	
	1/25/42	1135				P	2 2	6	2	2	1	1					
	1/25/42	1005				P	2 3	6	2	2	1	1			· · · · · · · · · · · · · · · · · · ·		
	1/28/92					Dup	o licate	4	2	2	ı	ı					
	1/25/92	0930				1	BLANK	6	2_	Z	ι	1					
						TRIP	BLAK	Z	2								
								-									
																	• .
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Relinquisi					Date	/ Time	Received by: (Signature)	,	Relind	quishe	d by:	(Signat	ure)		Date /	Time	Received by: (Signature)
Relinquisl	hed by: (S	Signature)			Date	/ Time	Received for Laboratory t (Signature)	oy:		Date	/ Tin	ne	Rema	irks	= le	Ro	ger Dunhan in 1-28-92
		C	Distrib	ution	Original Acco	mpanies S	Shipment. Copy returned wit	h Report.									1-28-42



WADSWORTH/ALERT

LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

Sampling, testing, mobile labs

February 12, 1992

Mr. Roger Durham ABB Environmental Services, Inc. 2571 Executive Center Circle East Suite 100 Tallahassee, FL 32301

Dear Mr. Durham:

Over the course of the past month, it was noted that toluene has begun randomly appearing in samples, trip blanks and equipment blanks at levels ranging from about 2 ug/L to about 22 ug/L. We have investigated its presence and feel that we have located the source of this random contamination problem.

WAL began using custom printed sample container labels this past fall. At that time we evaluated the labels for any trace contaminants and found none. In late December we received a second shipment of identical labels and began using them for sampling kits sent out after 20 December 1991. The investigation of the toluene contamination led us to evaluate this second shipment of labels as well. Upon evaluation, it was found that these labels are contaminated with Toluene as well as 2-Butanone (MEK). Given that these are volatile compounds it can be demonstrated that, under certain conditions, these compounds might migrate across the septum of the sample vial.

We have discontinued use of these labels and are attempting to reissue new labels and bottles for any sample kits which are still pending. In addition we are working with the printer to determine why these labels were not made to our previously determined specifications. We have also established a policy of testing all label batches before they may be used in any kits.

The impact which these findings have on any recent or current analytical data must be determined on an individual basis. If you have any questions regarding this matter or would like to further investigate particular results, please contact your project manager or myself at (813) 621-0784. Thank you for your patience and help in this matter.

Sincerely,

Wadsworth/ALERT Laboratories

N. Myron Gunsalus, Jr.

Quality Control Coordinator



GROUNDWATER SAMPLE ANALYSES

April 15, 1992



LABORATORIES 5910 Breckenridge Pkwy., Suite H, Tampa, FL 33610

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015, MOD. NO. 0001

NAS/NADEP PENSACOLA

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson

Project Manager

Laboratory Director Florida

May 4, 1992





INVOLVEMENT

This report summarizes the analytical results of the NAS/NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 16 April 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.



ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER	<u>'</u>	METHOD
	ORGANICS	
Volatile Organics		** EPA Method 624
Base Neutral/Acid Extractables		** EPA Method 625
	METALS	
Arsenic		** EPA Method 206.2
Cadmium		** EPA Method 200.7
Chromium		** EPA Method 200.7
Lead		** EPA Method 239.2
	MISCELLANEOUS	
Tot. Rec. Petroleum Hydrocarbons		** EPA Method 418.1

NOTE: ** Indicates usage of this method to obtain results for this report. -Methods for Chemical Analysis of Water and Wastes, USEPA, EPA Methods 600/4-79-020, March, 1983. July, 1982 Drinking Waters USEPA, 600/4-88/039, December, 1988. Std. Methods -Standard Methods for the Examination of Water and Wastewater, APHA, 16th edition, 1985. USEPA Methods -From 40CFR Part 136, published in Federal Register on October 26, 1984. SW846 Methods -Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986. -American Society for Testing and Materials. ASTM Methods -NIOSH Manual of Analytical Methods, National Institute for NIOSH Method Occupational Safety and Health, 2nd Edition, April 1977.



LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	
Bromomethane	ND	Ethylbenzene	ND
Carlos totachlorido	ND	Methylene chloride	ND
Carbon tetrachloride		1,1,2,2-Tetrachloroethane	
Chlorobenzene	ND	• • •	
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,3-Dichioropenzene	1410	vinyi chici ide	
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND	•	
-,	•		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	Ŋ
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	84	(75-123) (85-126)	(85-138)
Toluene-d8	99	(75-123) (89-124)	(89-128)
Bromofluorobenzene	90	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ИD	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	55	(22-135) (10-155)
Fluorobiphenyl	65	(34-140) (12-153)
Terphenyl-d14	39	(10-132) (13-140)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

16 ug/L

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-1 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

HRS84297

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND* ND*
2-Nitrophenol	ND
4-Nitrophenol Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value) В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	
		WATER SOLID	
2-Fluorophenol	51	(17-95) (24-118)	
Phenol-d5	58	(11-89) (17-124)	*
2,4,6-Tribromophenol	50	(10-134) (10-156)	



DATE RECEIVED: 4/16/92

LAB #: 2D1601-1 MATRIX : WATER

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-1 MATRIX : WATER

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

SAMPLE ID: 3221SW-MW1

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-2 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND ·	1,1,2-Trichloroethane	ND
			ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		
1,4 DICHIOLOCOHAHO	• • •		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
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SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	¥.
		WATER SOLID	LOW LEVEL
1.2-Dichloroethane	92	(75-123) (85-126)	(85-138)
Toluene-d8	. 101	(75-123) (89-124)	(89-128)
Bromofluorobenzene	93	(86-115) (84-124)	(83-128)

(Not Analyzed)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-2 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
v			

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

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COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-2

MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92

DATE ANALYZED:

4/24/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit: estimated value)

В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	45	(22-135) (10-155)
Fluorobiphenyl	41	(34-140) (12-153)
Terphenyl-d14	22	(10-132) $(13-140)$

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-2 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

HRS84297

ACID EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

(Compound detected in method blank associated with this sample) В

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	30	(17-95) (24-118)
Phenol-d5	29	(11-89) (17-124)
2,4,6-Tribromophenol	24	(10-134) (10-156)



DATE RECEIVED: 4/16/92

LAB #: 2D1601-2 MATRIX : WATER

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED: DATE EXTRACTED: 4/30/92

4/16/92

LAB ID: 2D1601-2 MATRIX : WATER

DATE ANALYZED:

5/ 1/92

SAMPLE ID: 3221SW-MW2

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-3 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND*		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	8
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	1		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE:
       ND
             (None Detected, lower detectable limit = 1
                                                                               ug/L) as rec'd
       ND* (None Detected, lower detectable limit = 10 ND** (None Detected, lower detectable limit =
                                                                               ug/L) as rec'd
                                                                               ug/L) as rec'd
              (Detected, but below quantitation limit; estimated value)
        J
              (Compound detected in method blank associated with this sample)
        В
```

(Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	ň
,		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123) (85-126)	(85-138)
Toluene-d8	100	(75-123) (89-124)	(89-128)
Bromofluorobenzene	95	(86-115) (84-124)	(83-128)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-3 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND
Bis(2-Chloroethyl)ether	ND		ND
Bis(2-Chloroisopropyl)ether	ND		ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene 4-Chlorophenyl phenyl ether Chrysene	ND ND	Hexachlorocyclopentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene	ND ND ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-3 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene Pyrene 1,2,4-Trichlorobenzene	ND ND ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 NOTE: ND ug/L) as rec'd ND* ug/L) as rec'd (Detected, but below quantitation limit: estimated value) J

В (Compound detected in method blank associated with this sample)

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	58	(22-135) (10-155)
Fluorobiphenyl	54	(34-140) (12-153)
Terphenyl-d14	30	(10-132) (13-140)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-3 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND* ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd (None Detected, lower detectable limit = 50 ug/L) as rec'd
	ND*	(1.01.0 1.01.01.01.01.01.01.01.01.01.01.01.01.01
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABL	E LIMITS
		WATER	SOLID
2-Fluorophenol	47	(17-95)	(24-118)
Phenol-d5	47	(11-89)	(17-124)
2,4,6-Tribromophenol	30	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-3 MATRIX : WATER

SAMPLE ID: 3221SW-MW3

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-3

SAMPLE ID: 3221SW-MW3

DATE EXTRACTED: DATE ANALYZED: 4/30/92 5/ 1/92

MATRIX : WATER

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: NA DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW4 N

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	
Bromomethane	ND	Ethylbenzene	
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	1
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
```

-- (Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	ų.
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	92	(75-123) (85-126)	(85-138)
Toluene-d8	99	(75-123) (89-124)	(89-128)
Bromofluorobenzene	91	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

HRS84297

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS
USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene ND Dibenzo(a,h)anthracene ND Acenaphthylene ND Di-n-butyl phthalate ND ND 1,2-Dichlorobenzene ND Anthracene ND* 1,3-Dichlorobenzene ND Benzidine Benzo(a)anthracene 1,4-Dichlorobenzene ND ND 3,3'-Dichlorobenzidine ND* Benzo(b)fluoranthene ND ND Diethyl phthalate Benzo(k)fluoranthene ND Dimethyl phthalate ND Benzo(ghi)perylene ND ND 2,4-Dinitrotoluene ND Benzo(a)pyrene ND 2,6-Dinitrotoluene Bis(2-Chloroethoxy) methane ND ND Di-n-octyl phthalate Bis(2-Chloroethyl)ether Fluoranthene ND Bis(2-Chloroisopropyl)ether ND ND Fluorene Bis(2-Ethylhexyl)phthalate Hexachlorobenzene ND 4-Bromophenyl phenyl ether ND Hexachlorobutadiene ND ND Butyl benzyl phthalate Hexachlorocyclopentadiene ND 2-Chloronaphthalene Hexachloroethane ND 4-Chlorophenyl phenyl ether ND Indeno(1,2,3-cd)pyrene ND ND Chrysene

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

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COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

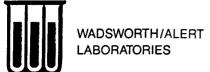
NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	×	ACCEPTABLE LIMITS
	•	WATER SOLID
Nitrobenzene-d5	5 6	(22-135) (10-155)
Fluorobiphenyl	53	(34-140) (12-153)
Terphenyl-d14	27	(10-132) (13-140)



LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS
OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

11 ug/L

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-4 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: 4/16/92
DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol	ND ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	*	ACCEPTABL	E LIMITS
		WATER	SOLID
2-Fluorophenol	39	(17-95)	(24-118)
Phenol-d5	37	(11-89)	(17-124)
2,4,6-Tribromophenol	29	(10-134)	(10-156)



COMPANY: ABB ENVIRONMENTAL SERVICES, INC. DATE RECEIVED: 4/16/92

LAB #: 2D1601-4 MATRIX : WATER

SAMPLE ID: 3221SW-MW4

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION RESULT LIMIT		
Arsenic	4/28/92	ND	10	ug/L	
Cadmium	4/28/92	ND	10	ug/L	
Chromium	4/28/92	ND	50	ug/L	
Lead	4/28/92	ND	5	ug/L	

NOTE: ND (None Detected)



DATE RECEIVED: 4/

4/16/92

LAB ID: 2D1601-4

SAMPLE ID: 3221SW-MW4

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

MATRIX : WATER

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

NOTE: ND (None Detected)



LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND	
Bromodichloromethane Bromoform Bromomethane	ND ND ND	cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethylbenzene	ND ND ND	
Carbon tetrachloride Chlorobenzene Chloroethane	ND ND ND	Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethene	13 ND 6	В
2-Chloroethylvinyl ether Chloroform Chloromethane	ND ND ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND ND ND	
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND ND ND	Trichloroethene Trichlorofluoromethane Vinyl chloride	ND ND ND	
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND	

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NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
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SURROGATE RECOVERY:	X	ACCEPTABLE LIM	iits 🦠
		WATER SOL	ID LOW LEVEL
1,2-Dichloroethane	91	(75-123) (85-	126) (85-138)
Toluene-d8	100	(75-123) (89-	124) (89-128)
Bromofluorobenzene	109	(86-115) (84-	124) (83-128)



LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4
DATE EXTRACTED:

4/16/92 NA

DATE ANALYZED:

4/20/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

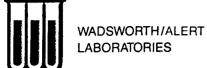
CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

1,3,5-Trimethyl benzene	150	ug/L
1,2-Diethyl benzene	37	ug/L
1-(4-Methyl phenyl) ethanone	19	ug/L
1,3-Diethyl benzene	21	ug/L
1-Methyl-3-(1-methylethyl) benzene	77	ug/L
4-Ethyl-1,2-dimethyl benzene	57	ug/L
2-Ethyl-1,4-dimethyl benzene	29	ug/L
2,3-Dihydro-1-methyl-1H-indene	25	ug/L
1-Ethyl-2,3-dimethyl benzene	28	ug/L
1,2,3,4-Tetramethyl benzene	35	ug/L



LAB #: 2D1601-5 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

HRS84297

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

(1 of 2) USEPA METHOD 625 - GC/MS

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND .	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND
v			

NOTE:		(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
•	מא
1,2,4-Trichlorobenzene	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit: estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	*	ACCEPTABLE LIMITS		
		WATER SOLID		
Nitrobenzene-d5	50	(22-135) (10-155)		
Fluorobiphenyl	36	(34-140) (12-153)		
Terphenyl-d14	24	(10-132) (13-140)		

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5 MATRIX: WATER

DATE RECEIVED:

4/16/92

DATE EXTRACTED:

4/16/92

DATE ANALYZED:

4/24/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

E84059 HRS84297

EXTRACTABLE ORGANICS
OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

(1-Methlethyl)-benzene	9	ug/L	
1,2-Diethyl-benzene	24	ug/L	
1,4-Diethyl-benzene	13	ug/L	
1,3-Diethyl benzene	15	ug/L	
1-Octanol	15	ug/L	
1-Methyl-4-(1-methylethyl)-benzene	66	ug/L	
2-Ethyl-1,4-dimethyl-benzene	15	ug/L	
1-Ethyl-3,5-dimethyl-benzene	18	ug/L	
2,3-Dihydro-4-methyl-1H-indene	13	ug/L	
1,2,3,4-Tetrahydro-naphthalene	8	ug/L	

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-5 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

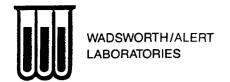
ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol 2.4.6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec	'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec	'd
	J	(Detected, but below quantitation limit; estimated value)	
	В	(Compound detected in method blank associated with this sample)	

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	38	(17-95) (24-118)
Phenol-d5	38	(11-89) (17-124)
2,4,6-Tribromophenol	31	(10-134) (10-156)



DATE RECEIVED: 4/16/92

LAB #: 2D1601-5 MATRIX : WATER

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L

NOTE: ND (None Detected)



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-5 MATRIX : WATER

DATE EXTRACTED: DATE ANALYZED:

4/30/92 5/ 1/92

SAMPLE ID: 3221SW-MW5

NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1

ND (None Detected) NOTE:



LAB #: 2D1601-6
MATRIX: WATER

DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/20/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein Acrylonitrile Benzene	ND* ND ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
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2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
	ND	ng rene (10 tar)	212
1,1-Dichloroethane			
1,2-Dichloroethane	ND		

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NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABL	E LIMITS	r <u>ē</u>
		WATER	SOLID	LOW LEVEL
1,2-Dichloroethane	92	(75-123)	(85-126)	(85-138)
Toluene-d8	98	(75-123)	(89-124)	(89-128)
Bromofluorobenzene	92	(86-115)	(84-124)	(83-128)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ΝD
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS WATER SOLID
Nitrobenzene-d5	58	(22-135) (10-155)
Fluorobiphenyl	109	(34-140) (12-153)
Terphenyl-d14	31	(10-132) (13-140)

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6
MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

HRS84297

EXTRACTABLE ORGANICS
OTHER COMPOUNDS

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS with their estimated concentrations

Butyl-cyclobutane

19 ug/L

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-6 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-DUPLICATE NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2.4.6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	
		WATER	SOLID
2-Fluorophenol	42	(17-95)	(24-118)
Phenol-d5	43	(11-89)	(17-124)
2,4,6-Tribromophenol	38	(10-134)	(10-156)



LAB #: 2D1601-6 MATRIX : WATER

SAMPLE ID : 3221SW-DUPLICATE

NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

	PREPARATION -		DETECTION	
ELEMENT	ANALYSIS DATE	RESULT	LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	6	5	ug/L



DATE RECEIVED:

4/16/92

LAB ID: 2D1601-6

DATE EXTRACTED: 4/30/92

DATE ANALYZED: 5/ 1/92

MATRIX : WATER

SAMPLE ID: 3221SW-DUPLICATE NADEP PEN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ИD	mg/L	1



LAB #: 2D1601-12 MATRIX: WATER DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/18/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene	ND
Acrylonitrile	ND*	1,2-Dichloroethene(Total)	ND
Benzene	ND	1,2-Dichloropropane	ND
Denzene			
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
bromomethane	ND	Helly I de libelle	
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
	ND	Tetrachloroethene	ND
Chloroethane	שמא	Tett achior dechene	
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
	ND	1,1,2-Trichloroethane	ND
Chloromethane	עא	1,1,2 illentoloculano	
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
		Vinyl chloride	ND
1,3-Dichlorobenzene	ND	vinyi chioride	1112
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
	ND	, 20110 (20 000)	
1,1-Dichloroethane			
1,2-Dichloroethane	ND		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	ě
		WATER SOLID	LOW LEVEL
1.2-Dichloroethane	93	(75-123) (85-126)	(85-138)
Toluene-d8	101	(75-123) (89-124)	(89-128)
Bromofluorobenzene	97	(86-115) (84-124)	(83-128)

WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-12 MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine	ND*	1,3-Dichlorobenzene	ND
Benzo(a)anthracene	ND	1,4-Dichlorobenzene	ND
Benzo(b)fluoranthene	ND	3,3'-Dichlorobenzidine	ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane	ND	2,6-Dinitrotoluene	ND
Bis(2-Chloroethyl)ether	ND	Di-n-octyl phthalate	ND
Bis(2-Chloroisopropyl)ether	ND	Fluoranthene	ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether		Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

ij



LAB #: 2D1601-12

MATRIX: WATER

DATE RECEIVED:

4/16/92

DATE EXTRACTED:

4/16/92

DATE ANALYZED:

4/24/92

SAMPLE ID: 3221SW-EQUIP BLANK

NADEP PEN

CERTIFICATION #: E84059

HRS84297

BASE/NEUTRAL EXTRACTABLE ORGANICS

USEPA METHOD 625 - GC/MS (2 of 2)

ND Isophorone ND Naphthalene Nitrobenzene ND N-Nitrosodimethylamine ND N-Nitrosodiphenylamine ND N-Nitrosodi-n-propylamine ND ND Phenanthrene ND Pyrene ND 1,2,4-Trichlorobenzene

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd

J (Detected, but below quantitation limit: estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)

SURROGATE RECOVERY: ACCEPTABLE LIMITS X WATER SOLID 56 (22-135)(10-155)Nitrobenzene-d5 Fluorobiphenyl 54 (34-140)(12-153)(10-132)Terphenyl-d14 60 (13-140)

WADSWORTH/ALERT **LABORATORIES**

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-12 MATRIX: WATER

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: 3221SW-EQUIP BLANK NADEP PEN

CERTIFICATION #: E84059

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

HRS84297

4-Chloro-3-methylphenol 2-Chlorophenol 2,4-Dichlorophenol	ND ND ND
2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	ND *ND*
2-Nitrophenol 4-Nitrophenol Pentachlorophenol	ND ND*
Phenol 2,4,6-Trichlorophenol	ND ND

NOTE:	ND	(None Detected, lower detectable limit = 10 ug/L) as rec'd
	ND*	(None Detected, lower detectable limit = 50 ug/L) as rec'd
	J	(Detected, but below quantitation limit; estimated value)
	В	(Compound detected in method blank associated with this sample)
		(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	39	(17-95) (24-118)
Phenol-d5	37	(11-89) $(17-124)$
2,4,6-Tribromophenol	35	(10-134) $(10-156)$



LAB #: 2D1601-12 MATRIX : WATER

SAMPLE ID: 3221SW-EQUIP BLANK NADEP PEN

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28- 4/29/92	ND	5	ug/L



DATE RECEIVED: 4/1

4/16/92 4/30/92

LAB ID: 2D1601-12 MATRIX: WATER

DATE EXTRACTED: DATE ANALYZED:

5/ 1/92

SAMPLE ID: 3221SW-EQUIP BLANK NADEP PEN

EN

CERTIFICATION #: E84059

HRS84297

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS REPORT

	RESULT	UNITS	LOWER DETECTION LIMIT
Total Recoverable Petroleum Hydrocarbons	ND	mg/L	1



LAB #: 2D1601-13 MATRIX: WATER

DATE EXTRACTED: 4/18/92 DATE ANALYZED:

SAMPLE ID: TRIP BLANK

NADEP PEN

CERTIFICATION #: E84059

DATE RECEIVED:

HRS84297

4/16/92

NA

VOLATILE ORGANICS USEPA METHOD 624 - GC/MS

Acrolein	ND*	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND
Acrylonitrile	ND*		ND
Benzene	ND		ND
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	ND
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane	ND
Chloroform	ND		ND
Chloromethane	ND		ND
Dibromochloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	ND	. Trichloroethene	ND
	ND	Trichlorofluoromethane	ND
	ND	Vinyl chloride	ND
1,4-Dichlorobenzene 1,1-Dichloroethane 1,2-Dichloroethane	ND ND ND	Xylene(Total)	ND

```
ug/L) as rec'd
            (None Detected, lower detectable limit = 1
NOTE:
      ND
                                                                   ug/L) as rec'd
           (None Detected, lower detectable limit = 10
      ND*
      ND** (None Detected, lower detectable limit =
                                                                   ug/L) as rec'd
            (Detected, but below quantitation limit; estimated value)
      J
            (Compound detected in method blank associated with this sample)
      В
```

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS	
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	91	(75-123) (85-126) (85-138)
Toluene-d8	99	(75-123) (89-124) (89-128)
Bromofluorobenzene	92	(86-115) (84-124) (83-128)



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

<u>Volatiles</u>	
Methylene	chloride
Toluene	
2-Butanone	•
Acetone	

Semi-volatiles
Dimethyl phthalate
Diethly phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

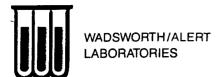
Metals Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.

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QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC RPD	LIMITS RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.%		ep. method Form range

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prévents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



LAB #: 2D1601-BK MATRIX: WATER

DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/17/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

HRS84297

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

ND* 1,1-Dichloroethene ND Acrolein 1,2-Dichloroethene(Total) ND Acrylonitrile ND* 1,2-Dichloropropane ND Benzene ND ND ND cis-1,3-Dichloropropene Bromodichloromethane ND trans-1,3-Dichloropropene ND Bromoform Bromomethane Ethylbenzene ND ND Carbon tetrachloride ND Methylene chloride ND 1,1,2,2-Tetrachloroethane ND Chlorobenzene Tetrachloroethene ND Chloroethane ND ND ND Toluene 2-Chloroethylvinyl ether ND ND 1,1,1-Trichloroethane Chloroform ND 1,1,2-Trichloroethane Chloromethane ND ND Trichloroethene ND Dibromochloromethane Trichlorofluoromethane ND 1,2-Dichlorobenzene ND Vinyl chloride ND ND 1,3-Dichlorobenzene Xylene(Total) ND ND 1,4-Dichlorobenzene 1,1-Dichloroethane ND ND 1,2-Dichloroethane

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	x	ACCEPTABLE LIMITS	*
		WATER SOLID	LOW LEVEL
1,2-Dichloroethane	81	(75-123) (85-126)	(85-138)
Toluene-d8	99	(75-123) (89-124)	(89-128)
Bromofluorobenzene	91	(86-115) (84-124)	(83-128)



LAB #: 2D1601-BK MATRIX: WATER

DATE RECEIVED: 4/16/92
DATE EXTRACTED: NA
DATE ANALYZED: 4/20/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

VOLATILE ORGANICS
USEPA METHOD 624 - GC/MS

HRS84297

Acrolein Acrylonitrile	ND* ND* ND	1,1-Dichloroethene 1,2-Dichloroethene(Total) 1,2-Dichloropropane	ND ND ND
Benzene	ND	1,2 Dichioropropane	
Bromodichloromethane	ND	cis-1,3-Dichloropropene	ND
Bromoform	ND	trans-1,3-Dichloropropene	ND
Bromomethane	ND	Ethylbenzene	ND
Carbon tetrachloride	ND	Methylene chloride	1
Chlorobenzene	ND	1,1,2,2-Tetrachloroethane	ND
Chloroethane	ND	Tetrachloroethene	ND
2-Chloroethylvinyl ether	ND	Toluene	ND
Chloroform	ND	1,1,1-Trichloroethane	ND
Chloromethane	ND	1,1,2-Trichloroethane	ND
Dibromochloromethane	ND	Trichloroethene	ND
1,2-Dichlorobenzene	ND	Trichlorofluoromethane	ND
1,3-Dichlorobenzene	ND	Vinyl chloride	ND
1,4-Dichlorobenzene	ND	Xylene(Total)	ND
1,1-Dichloroethane	ND		
1,2-Dichloroethane	ND		

```
NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd ND* (None Detected, lower detectable limit = 10 ug/L) as rec'd ND** (None Detected, lower detectable limit = ug/L) as rec'd J (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)
```

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS WATER SOLID	LOW LEVEL
1,2-Dichloroethane	96	(75-123) (85-126)	
Toluene-d8	100	(75-123) (89-124)	
Bromofluorobenzene	96	(86-115) (84-124)	(83-128)



LAB #: 2D1601-BK MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL -- EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (1 of 2)

Acenaphthene	ND	Dibenzo(a,h)anthracene	ND
Acenaphthylene	ND	Di-n-butyl phthalate	ND
Anthracene	ND	1,2-Dichlorobenzene	ND
Benzidine Benzo(a)anthracene Benzo(b)fluoranthene	ND* ND ND	1,3-Dichlorobenzene 1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND ND*
Benzo(k)fluoranthene	ND	Diethyl phthalate	ND
Benzo(ghi)perylene	ND	Dimethyl phthalate	ND
Benzo(a)pyrene	ND	2,4-Dinitrotoluene	ND
Bis(2-Chloroethoxy)methane Bis(2-Chloroethyl)ether Bis(2-Chloroisopropyl)ether	ND ND ND	2,6-Dinitrotoluene Di-n-octyl phthalate Fluoranthene	ND ND ND
Bis(2-Ethylhexyl)phthalate	ND	Fluorene	ND
4-Bromophenyl phenyl ether	ND	Hexachlorobenzene	ND
Butyl benzyl phthalate	ND	Hexachlorobutadiene	ND
2-Chloronaphthalene	ND	Hexachlorocyclopentadiene	ND
4-Chlorophenyl phenyl ether	ND	Hexachloroethane	ND
Chrysene	ND	Indeno(1,2,3-cd)pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 10 ug/L) as rec'd ND* (None Detected, lower detectable limit = 50 ug/L) as rec'd (Detected, but below quantitation limit; estimated value)

B (Compound detected in method blank associated with this sample)

-- (Not Analyzed)



WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92

LAB #: 2D1601-BK MATRIX: WATER

4/24/92 DATE ANALYZED:

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059

BASE/NEUTRAL EXTRACTABLE ORGANICS

HRS84297

USEPA METHOD 625 - GC/MS (2 of 2)

Isophorone	ND
Naphthalene	ND
Nitrobenzene	ND
N-Nitrosodimethylamine	ND
N-Nitrosodiphenylamine	ND
N-Nitrosodi-n-propylamine	ND
Phenanthrene	ND
Pyrene	ND
1,2,4-Trichlorobenzene	ND

(None Detected, lower detectable limit = 10 (None Detected, lower detectable limit = 50 ug/L) as rec'd NOTE: ND ug/L) as rec'd ND*

(Detected, but below quantitation limit: estimated value) J

(Compound detected in method blank associated with this sample) В

(Not Analyzed)

SURROGATE RECOVERY:	X	ACCEPTABLE LIMITS
		WATER SOLID
Nitrobenzene-d5	59	(22-135) (10-155)
Fluorobiphenyl	63	(34-140) (12-153)
Terphenyl-d14	69	(10-132) (13-140)

. WADSWORTH/ALERT LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.

LAB #: 2D1601-BK MATRIX: WATER DATE RECEIVED: 4/16/92 DATE EXTRACTED: 4/16/92 DATE ANALYZED: 4/24/92

SAMPLE ID: LABORATORY BLANK

CERTIFICATION #: E84059 HRS84297

ACID EXTRACTABLE ORGANICS USEPA METHOD 625 - GC/MS

4-Chloro-3-methylphenol 2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND*
2-Methyl-4,6-dinitrophenol	ND*
2-Nitrophenol	ND
4-Nitrophenol	ND*
Pentachlorophenol	ND*
Phenol	ND
2,4,6-Trichlorophenol	ND

NOTE:	ND	(None Detected, lower detectable limit = 10	ug/L) as re	
	ND*	(None Detected, lower detectable limit = 50	ug/L) as re	c'd
	J	(Detected, but below quantitation limit; estimated	value)	
	В	(Compound detected in method blank associated with	this sample)	
		(Not Analyzed)		

SURROGATE RECOVERY:	* *	ACCEPTABLE LIMITS
		WATER SOLID
2-Fluorophenol	47	(17-95) (24-118)
Phenol-d5	45	(11-89) (17-124)
2,4,6-Tribromophenol	54	(10-134) (10-156)



DATE RECEIVED: 4/16/92

LAB #: 2D1601-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic	4/28/92	ND	10	ug/L
Cadmium	4/28/92	ND	10	ug/L
Chromium	4/28/92	ND	50	ug/L
Lead	4/28/92	ND	5	ug/L



5910 Breckenridge Parkway, Suite H Tampa, FL 33610

813-621-0784 FAX 813-623-6021

ANALYTICAL REPORT

SUBCONTRACT NUMBER: 1-08-134

TASK ORDER NUMBER: 0015

NADEP PENSACOLA

Presented to:

PETER REDFERN

ABB ENVIRONMENTAL SERVICES, INC.

WADSWORTH/ALERT LABORATORIES
5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FL 33610

(813) 621-0784

Dan Henson Project Manager

Randall C. /Grubbs

Laboratory Ditector - Florida

September 14, 1992



INVOLVEMENT

This report summarizes the analytical results of the NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Peter Redfern. The samples were accepted into Wadsworth's Florida facility on 29 August 1992, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.

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ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER

METHOD

METALS

** EPA Method 206.2 ** SW846 Method 7060 Arsenic Cadmium Chromium ** EPA Method 239.2 ** SW846 Method 6010 Lead ** SW846 Method 3050 Digestion

NOTE:

** Indicates usage of this method to obtain results for this report.

(D)

EPA Methods

Indicates draft version of this method was used

Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-

79-020, March, 1983. July, 1982 Drinking Waters USEPA, 600/4-88/039, December, 1988.

Standard Methods for the Examination of Water and Waste-water,

APHA, 16th edition, 1985.

USEPA Methods

Std. Methods

From 40CFR Part 136, published in Federal Register on October

26, 1984.

SW846 Methods

Test Methods for Evaluating Solid Waste Physical/Chemical

Methods, 3rd Edition, USEPA, 1986.

ASTM Methods

American Society for Testing and Materials.
NIOSH Manual of Analytical Methods, National Institute for

NIOSH Method Occupational Safety and Health, 2nd Edition, April 1977.



LAB #: 2H2914-1 MATRIX : SOIL

SAMPLE ID : SB9 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 95

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Arsenic	9/ 8- 9/ 9/92	ND	0.5 mg/kg
Cadmium	9/ 8/92	ND	0.5 mg/kg
Chromium	9/ 8/92	ND	2.5 mg/kg
Lead	9/ 8/92	ND	2.5 mg/kg



LAB #: 2H2914-2 MATRIX : SOIL

SAMPLE ID : SB10 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 94

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION RESULT LIMIT			
Arsenic	9/ 8- 9/ 9/92	ND	0.5	mg/kg	
Cadmium	9/ 8/92	ND	0.5	mg/kg	
Chromium	9/ 8/92	ND	2.5	mg/kg	
Lead	9/ 8/92	ND	2.5	mg/kg	



LAB #: 2H2914-3 MATRIX : SOIL

SAMPLE ID : SB11 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 90

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT		
Arsenic	9/ 8- 9/ 9/92	ND	0.5	mg/kg	
Cadmium	9/ 8/92	ND	0.5	mg/kg	
Chromium	9/ 8/92	ND	2.5	mg/kg	
Lead	9/ 8/92	ND	2.5	mg/kg	



LAB #: 2H2914-4 MATRIX : SOIL

SAMPLE ID : SB12 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 95

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION RESULT LIMIT			
Arsenic	9/ 8- 9/ 9/92	ND	0.5 mg/kg		
Cadmium	9/ 8/92	ND	$0.5 ext{ mg/kg}$		
Chromium	9/ 8/92	ND	2.5 mg/kg		
Lead	9/ 8/92	ND	2.5 mg/kg		



LAB #: 2H2914-5 MATRIX : SOIL

SAMPLE ID: SB13 (5') PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - dry weight basis

DRY WEIGHT (%): 94

ELEMENT	PREPARATION - ANALYSIS DATE	DETECTION RESULT LIMIT			
Arsenic	9/ 8- 9/ 9/92	ND	0.5 mg/kg		
Cadmium	9/ 8/92	ND	0.5 mg/kg		
Chromium	9/ 8/92	ND	2.5 mg/kg		
Lead	9/ 8/92	ND	2.5 mg/kg		



LAB #: 2H2914-6 MATRIX : WATER

SAMPLE ID : EQUIP BLANK PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT		
Arsenic	9/ 4- 9/ 8/92	ND	10	ug/L	
Cadmium	9/ 4/92	ND	10	ug/L	
Chromium		ND	50	ug/L	
Lead	9/ 4/92	ND	5	ug/L	



QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY

considers continuous analytical Laboratories Wadsworth/ALERT performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

<u>Volatiles</u> Toluene 2-Butanone Acetone

<u>Semi-volatiles</u> Methylene chloride Dimethyl phthalate Diethly phthalate Di-n-butyl phthalate Butyl benzyl phthalate Bis (2-ethylhexyl) phthalate <u>Metals</u> Calcium Magnesium Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



QUALITY ASSURANCE / QUALITY CONTROL PROGRAM SUMMARY (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent

determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
4,4'-DDT Benzene	0 10	95 86	112 93	16 8	22 20	66-119 39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		ccep. method erform range

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

- J indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).
- B indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.
- DIL indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



LAB #: 2H2914-BK MATRIX : WATER

SAMPLE ID : LABORATORY BLANK PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT

HRS84297

SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Arsenic Cadmium Chromium	9/ 4- 9/ 8/92 9/ 4/92 9/ 4/92	ND ND ND	10 10 50	ug/L ug/L ug/L
Lead	9/ 4/92	ND	5	ug/L



DATE RECEIVED: 8/29/92

LAB #: 2H2914-BK MATRIX : SOIL

SAMPLE ID : LABORATORY BLANK PROJ #3221 SW

CERTIFICATION #: E84059

METALS ANALYTICAL REPORT SELECTED LIST

HRS84297

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT		
Arsenic Cadmium Chromium	9/ 8- 9/ 9/92 9/ 8/92 9/ 8/92	ND ND ND	0.01 mg/L 0.01 mg/L 0.05 mg/L		
Lead	9/ 8/92	ND	0.05 mg/L		

NOTE: ND (None Detected)

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LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS METALS

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
Arsenic (furnace) Cadmium Chromium Lead (furnace)	09/04/92 09/04/92	09/08/92 09/04/92 09/04/92 09/04/92	86 93 97 90	38 53-131 18 77-113 21 79-121 33 64-132	LCS



LAB ID : LCS

MATRIX : SOIL

LABORATORY CONTROL SAMPLE RESULTS METALS

ELEMENT	DATE PREPARED	DATE ANALYZED	LCS %REC	QC LIMITS RPD %REC	
Arsenic furnace	09/08/92	09/09/92	81	36 51-125	LCS
Cadmium		09/08/92	90	22 67-113	
Chromium	09/08/92	09/08/92	89	22 73-118	
Lead	09/08/92	09/08/92	84	35 58-130	



LAB ID: 2H2914-1

MATRIX: SOIL

DATE RECEIVED : 08/29/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY INORGANIC PARAMETERS - METALS

ELEMENT	DATE PREPARED	DATE ANALYZED	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC	LAB ID
Arsenic furnace Cadmium Chromium Lead	, ,		116 82 86 92	120 83 87 95	1	15 77-107 17 73-107 14 80-108 34 65-135	2H2914-1

* = Diluted out

WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Clie	ent: Project Name/Number: 3	22/50	
Samp	ples Received By: 300 Lavy Bulle Date Received:		<u> </u>
	(Signature)	/ /	
Samp	ole Evaluation Form By: Zackary Botto LAB No: _	5/83/2	42914-1
	(Signature)		
Туре	e of shipping container samples received in? WAL Cooler		
	Client Cooler WAL Shipper Box Other		
Any	"NO" responses or discrepancies should be explained in comments	section	•
		YES	NO
1.	Were custody seals on shipping container(s) intact?	. 7	
2.	Were custody papers properly included with samples?	. 7	*****
3.	Were custody papers properly filled out (ink, signed, match labels)?	. 7	
4.	Did all bottles arrive in good condition (unbroken)?	. <u>\</u>	
5.	Were all bottle labels complete (Sample No., date, signed, analysis preservatives)?		· · · · · · · · · · · · · · · · · · ·
6.	Were correct bottles used for the tests indicated?	. \(\)	
7.	Were proper sample preservation techniques indicated?	٠٧	
8.	Were samples received within adequate holding time?	.7	· · ·
9.	Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section)		•
10.	Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW)	. 7	
11.	Were samples accepted into the laboratory? (If no see comments)		
	Cooler # Temp *C Cooler # Temp	•	'C
	Cooler # *C Cooler # Temp		C
Comm	Parameter violicate to, cd, CK, Jb,	OC.	bottles
· 	farameter indicate to, cd, CK, fb,		
		<u> </u>	